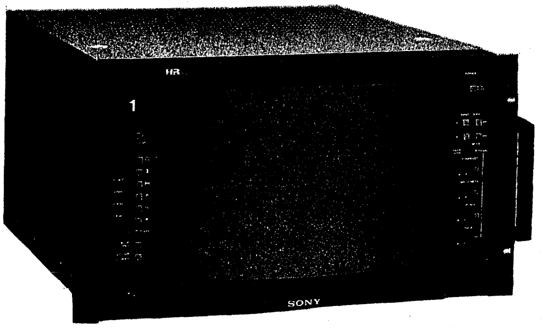
SONY®

TRINITRON® COLOR VIDEO MONITOR

BVM-1315
BVM-1415P/PM



HR TRINITRON

OPERATION AND MAINTENANCE MANUAL

1st Edition

Serial No. 2000001 and Higher (BVM-1315)
Serial No. 2000001 and Higher (BVM-1415P)
(EBU N-10 LEVEL)
Serial No. 2000001 and Higher (BVM-1415PM)

Warning—This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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—or—
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ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

CAUTION!!

**DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.**

ATTENTION!!

**NE PAS UTILISER DE DÉMAGNÉTISEUR EXTÉRITUR POUR DÉMAGNÉTISER L'ÉCRAN.
UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LE PANNEAU FRONTAL.**

TABLE OF CONTENTS

1. OPERATION

1-1. Outline 1-1
  1-1-1. Features 1-1
  1-1-2. Options 1-2
1-2. Voltage selection 1-3
1-3. Location and function of controls 1-4
  1-3-1. Front panel 1-4
  1-3-2. Rear panel 1-7
  1-3-3. Sub control panels inside the drawers 1-9
  1-3-4. Switches inside the cabinet 1-13
1-4. White balance adjustment 1-14
1-5. Specifications 1-15
1-6. Packing 1-17

2. DISASSEMBLY

2-1. Cabinet Removal and the Side Panels 2-1
2-2. Bezel Assembly Removal 2-1
2-3. Bottom Cover Removal 2-2
2-4. Check of C Board 2-2
2-5. BK Block Removal 2-3
2-6. Check of BK Board 2-3
2-7. Check of BA, BB, BC, BD, BG, BH, BI and BJ Boards 2-4
2-8. CG Board Removal 2-4
2-9. EA Board Removal 2-5
2-10. Flyback Transformer and High Voltage Block Removal 2-5
2-11. QA, W and V Boards Removal 2-6
2-12. Picture Tube Removal 2-6
2-13. Power Block Assembly Removal 2-7

3. CIRCUIT DESCRIPTION

3-1. QA, QB, BA Boards 3-1
3-2. BG Board 3-3
3-3. BH Board 3-5
3-4. BI Board 3-7
3-5. Sync Processor, Pulse Generator (BJ Board) 3-9
3-6. BK Board 3-13
3-7. Beam Control Circuit (BI, BK Boards) 3-15
3-8. NTSC Comb Filter (BB Board) 3-17
3-9. NTSC Demodulator, Y Trap Circuit (BC Board) 3-19
3-10. PAL Demodulator, Y Trap Circuit (BD Board) 3-21
3-11. PAL-M Demodulator, Y Trap Circuit (BM Board) 3-23
3-12. Vertical Deflection Output Circuit Convergence Output Circuit (EB Board) 3-25
3-13. Power Supply Circuit (GA, GB Boards) 3-27
3-14. D Board 3-29
3-15. Horizontal Deflection Output Circuit and High Voltage Regulator Circuit (EA Block) 3-31

4. ADJUSTMENTS

4-1. Internal View 4-1
4-2. Circuit Boards Location 4-2
4-3. Quick Reference 4-3
4-4. Sub Control Panel Location 4-4
4-5. Setup Adjustment in Case of Picture Tube Replacement 4-5
4-6. Safety Related Adjustments 4-11
4-7. Circuit Adjustments 4-17

5. DIAGRAMS

5-1. Block Diagram 5-1
5-2. Frame Wiring Diagram 5-5
5-3. Mounting and Schematic Diagrams 5-9
  BA Board 5-11
  BB Board 5-16
  BC Board 5-21
  BD or BM Boards 5-26
  BG Board 5-31
  BH Board 5-36
  BI Board 5-41
  BJ Board 5-46
  BK Board 5-51
  D Board 5-56
  EA, EB, C and P Boards 5-62
  GA and GB Boards 5-68
  HA, HB, HC, HG, HH, XB and Y Boards 5-74
  GC, QA, QB, V and W Boards 5-79
  TB Board 5-83
  Z Board 5-87
5-4. Semiconductors 5-89

6. EXPLODED VIEWS

6-1. Bezel 6-1
6-2. PICTURE TUBE 6-2
6-3. Chassis 6-3
6-4. Signal Block 6-4
6-5. Drawer Block (Right) 6-5
6-6. Power Block 6-7

7. ELECTRICAL PARTS LIST 7-1

SECTION 1
OPERATION

1-1. OUTLINE

1-1-1. Features

The BVM-1315, BVM-1415P/PM is a color video monitor designed for critical evaluation of video signals in broadcasting stations and production houses.
This manual covers the BVM-1315 (USA model), BVM-1415P (European model) and BVM-1415PM (PAL-M model).

High resolution picture
The Super Fine Pitch Trinitron picture tube (0.25 mm aperture grille) gives a high resolution, high contrast picture. Horizontal resolution is more than 600 TV lines at the center of the picture.

Stabilized color temperature
The newly-developed beam control circuit maintains the color temperature constant for a long period of time.

Split screen for precise picture confirmation
The lower half of the picture can be displayed in monochrome mode while the upper half is displayed in color mode. This facilitates confirmation of the luminance and chrominance channels, evaluation of the noise in chrominance or luminance channel, etc.

Blue only mode for precise evaluation of noise component
In blue only mode, an apparent monochrome display is obtained with all three control grids driven with a blue signal. This facilitates color saturation and phase adjustments and observation of VTR noise.

Other features
- Three color standards selectable using the optional plug-in type decoder boards
- Picture set-up function facilitating adjustment of the monitor reference black for the black level of an incoming video signal
- Pulse cross function for simultaneous checking of the horizontal and vertical sync signals or VITS (Vertical Interval Test Signal)
- Built-in crosshatch and 100% white signal generators facilitating monitor set-up
- VITC (Vertical Interval Time Code) display possible using the optional VITC reader board
- Pull-out drawer containing white balance, preset controls, and other function selectors.
- Auto and manual degaussing
- Three-position AFC switch
- Overdrive protection circuit to protect against picture tube damage
- EIA standard 19-inch rack mounting possible using the optional rack mount kit

1-1-2. Options

Model No.	Product name	Board name	Use
BKM-1410	NTSC ADAPTOR	BC	Decoder board for NTSC color system
BKM-1411	NTSC COMB ADAPTOR	BB	Comb filter board for NTSC color system
BKM-1420	PAL ADAPTOR	BD	Decoder board for PAL color system
BKM-1421	PAL-M ADAPTOR	BM	Decoder board for PAL-M color system
BKM-1430	SECAM ADAPTOR	BE	Decoder board for SECAM color system
BKM-1440	RGB/COMPONENT ADAPTOR	BF	Decoder outputs of RGB or component signals
BKM-1460	VITC ADAPTOR	BL	Reader of Vertical Interval Time Code
BKM-1470	SAFE AREA DISPLAY	BQ	For displaying the safe area
BKM-1480	BLACK LEVEL SIGNAL GENERATOR	BS	For generating black level signals
BKM-1450	AUTO SET-UP ADAPTOR	BN BO	Auto chroma/phase adjustment, auto white balance adjustment, selection of color temperature
BKM-1400	RACK MOUNT KIT	–	For EIA standard 19 inch rack mounting

Combinations of the optional boards

The BVM-1315 is supplied with the BB circuit board (NTSC COMB ADAPTOR) and BC circuit board (NTSC ADAPTOR).

The BVM-1415P is supplied with the BD circuit board (PAL ADAPTOR).

The BVM-1415PM is supplied with the BM circuit board (PAL-M ADAPTOR).

You can choose up to five optional B boards above including the supplied circuit board(s). The combinations of the B boards are limited depending on which boards can be accepted for each board compartment.

Board name (Function)	Compartment name				
	B5	B4	B3	B2	B1
BB (NTSC COMB FILTER)	X	O	O	O	O
BC (NTSC DECODER)	O	O	O	O	O
BD (PAL DECODER)	O	O	O	O	O
BE (SECAM DECODER)	O	O	O	O	O
BM (PAL-M DECODER)	O	O	O	O	O
BF (RGB/COMPONENT)	X	X	O	X	X
BL (VITC)	X	X	X	O	X
BQ (SAFE AREA DISPLAY)	X	△	X	O	X
BS (BLACK LEVEL SIGNAL GENERATOR)	O	O	O	O	O
BN (AUTO SET-UP BO ADAPTOR)	O	O	X	X	X

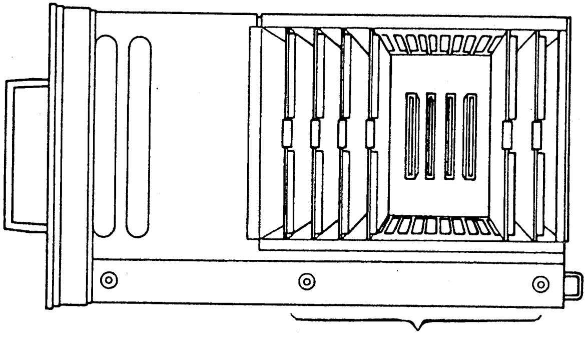
O: acceptable
X: not acceptable
△: acceptable but the switch or control settings on the sub control panels cannot control the display.

Notes

- Insert BA, BG, BH, BI and BJ boards into their respective compartments of the same name.
- Do not leave B5 compartment blank. Insert one of the boards specified in the above table. If no board is inserted, the luminance/chrominance or luminance channel will not be activated in composite signal mode.
- Do not insert BD (PAL DECODER) and BM (PAL-M DECODER) boards simultaneously. This causes malfunction of the monitor.

For details on installation, refer to the operation and maintenance manual of the optional board.

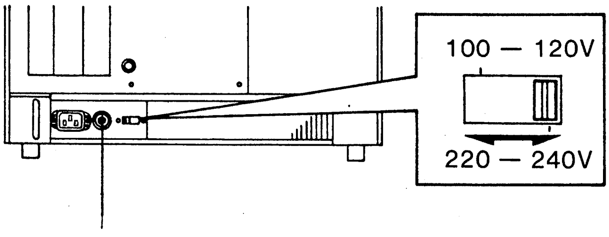
Right view (with the cabinet removed)



1-2. VOLTAGE SELECTION

The monitor operates on either 220 – 240 or 100 – 120V AC. Before connecting the unit to an AC outlet, make sure the voltage selector at the rear of the unit is set to the local power line voltage. Change the position of the selector if necessary.
The factory preset operating voltage of each model is as follows.

BVM-1315, 1415PM	100—120V
BVM-1415P	220—240V

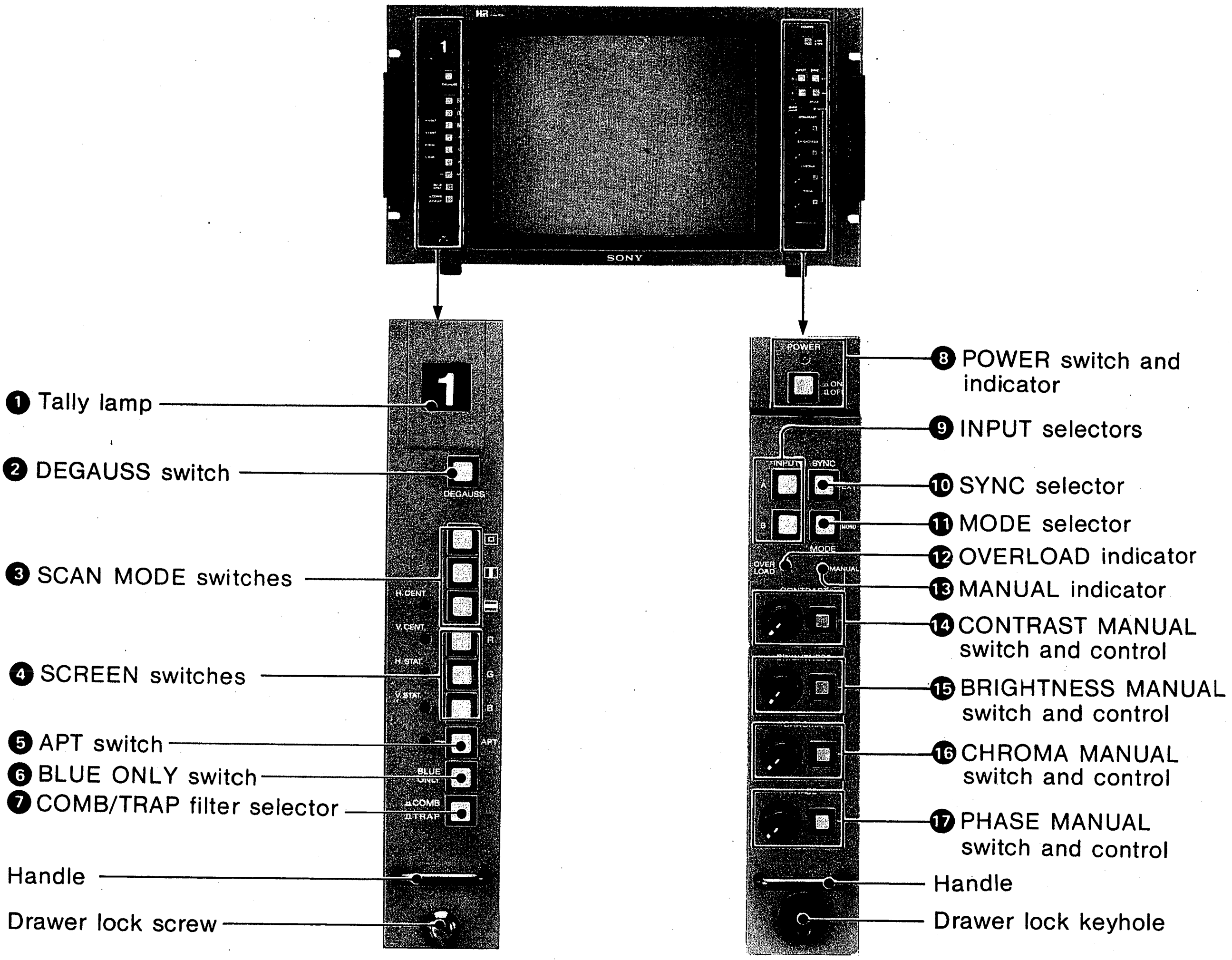


Fuse holder

Note
Use a T2A/250V fuse for 220 – 240V AC operation, and a 4A/125V fuse for 100 – 120V AC operation. The appropriate fuse is installed at the factory in accordance with the voltage presetting. If you change the voltage selector setting, replace the fuse with an appropriate one.

1-3. LOCATION AND FUNCTION OF CONTROLS

1-3-1. Front Panel


① Tally lamp
② DEGAUSS switch
③ SCAN MODE switches
④ SCREEN switches
⑤ APT switch
⑥ BLUE ONLY switch
⑦ COMB/TRAP filter selector
Handle
Drawer lock screw
⑧ POWER switch and indicator
⑨ INPUT selectors
⑩ SYNC selector
⑪ MODE selector
⑫ OVERLOAD indicator
⑬ MANUAL indicator
⑭ CONTRAST MANUAL switch and control
⑮ BRIGHTNESS MANUAL switch and control
⑯ CHROMA MANUAL switch and control
⑰ PHASE MANUAL switch and control
Handle
Drawer lock keyhole
SONY
DEGAUSS
H.CENT.
V.CENT.
H.STAT.
V.STAT.
APT
BLUE ONLY
COMB
TRAP
POWER
ON
OFF
INPUT
SYNC
MODE
OVER LOAD
MANUAL

① Tally lamp

Insert one of the tally number plates 1 to 5 (supplied) when the drawer is open.

The lamp lights when No. 3 and No.8 pins of the REMOTE connector on the rear panel are short-circuited.

② DEGAUSS switch

When the power is turned on, automatic degaussing is activated.

To demagnetize the screen manually, press this switch momentarily with the power turned on.

Wait for 5 minutes or more before activating degaussing again.

③ SCAN MODE switches

▢(underscan): Depress this switch for underscanning. The display size is reduced by approximately 3% so that four corners of the raster are visible.

◫(horizontal delay): Depress this switch to observe the horizontal sync signal. The picture is shifted horizontally and the horizontal sync signal is displayed in the left quarter of the screen. Picture brightness is automatically increased for easy observation.

⊟(vertical delay): Depress this switch to observe the vertical sync signal. The picture is shifted vertically and the vertical sync signal is displayed near the center of the screen. Picture brightness is automatically increased for easy observation.

- A pulse cross is displayed by depressing both the ◫ and ⊟ switches.
- To resume normal scanning, press to release the depressed switches.

④ SCREEN switches

The R, G and B switches turn the red, green and blue beams respectively on and off. To turn off the beam, depress the switch. To turn it on again, press to release it.

⑤ APT (aperture) switch

Normally keep this switch released. A flat frequency response is obtained.

For aperture correction, depress this switch and adjust the APT control ㉒ . The boost frequency, 4.5 MHz or 6.5 MHz, can be selected with the S1 switch on the BG board.

At the 4.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 4.5 MHz for subjective enhancement of the displayed picture.

At the 6.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 6.5 MHz for compensation of the aperture loss of the CRT.

⑥ BLUE ONLY switch

Normally keep this switch released. Depress this switch to turn off the red and green signals. A blue signal is displayed as an apparent monochrome picture on the screen. This facilitates CHROMA and PHASE control adjustments and observation of VTR noise.

⑦ COMB/TRAP filter selector

This selector is effective for the NTSC color system only, with the BKM-1410 NTSC adaptor and the BKM-1411 NTSC comb adaptor installed.

Depress the selector to activate the comb filter (⊓COMB). Press to release it for the trap filter (⊓TRAP).

When the BKM-1411 NTSC comb adaptor is not installed, or when a color system other than NTSC is selected, the trap filter is always activated regardless of this selector setting.

⑧ POWER switch and indicator

Depress this switch to turn on the power. The POWER indicator will light. To turn the power off, press the switch again.

⑨ INPUT selectors

Select the input signal.

A: To monitor the signals connected to the VIDEO A INPUT connector, depress this selector.

B: To monitor the signals connected to the VIDEO B INPUT connector, depress this selector and press the INPUT SELECT "B" button inside the right drawer.

For details on input selection, refer to "INPUT SELECT buttons" on page 1-11.

⑩ SYNC selector

Normally keep this selector released (INT). The monitor operates on the sync signal from the displayed composite video signal. To operate the monitor on an external sync signal supplied from the EXT SYNC connector on the rear panel, depress the selector (EXT).

⑪ MODE selector

Normally keep this selector released (AUTO). Color or monochrome mode is automatically selected according to the presence or absence of color burst. Depress the selector (MONO) to display the monochrome picture.

⑫ OVERLOAD indicator

This indicator lights to warn of overdrive of the CRT.

⑬ MANUAL indicator

This indicator lights when any of the MANUAL switches ⑭ through ⑰ is depressed.

⑭ CONTRAST MANUAL switch and control

When this switch is in the released position, the contrast preset with the PRESET CONTRAST control inside the right drawer is obtained. To adjust the contrast manually, depress this switch and turn this control.

⑮ BRIGHTNESS MANUAL switch and control

When this switch is in the released position, the brightness preset with the PRESET BRIGHTNESS control inside the right drawer is obtained. To adjust the brightness manually, depress this switch and turn this control.

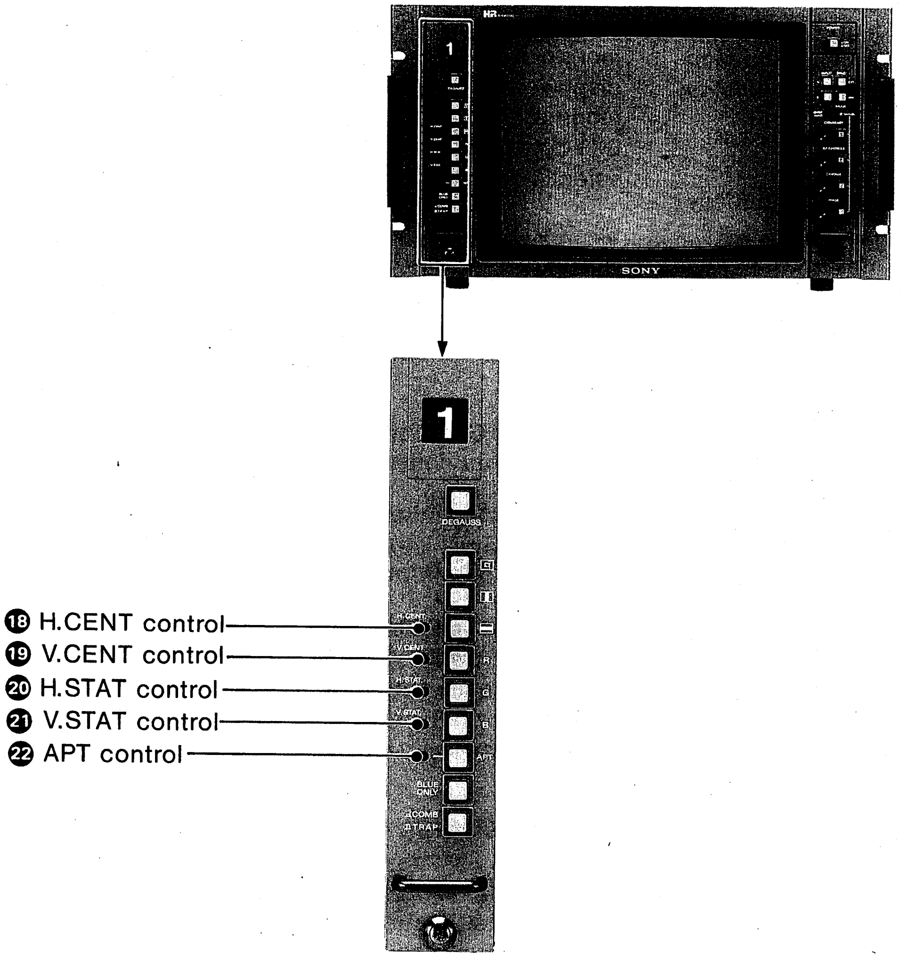
⑯ CHROMA MANUAL switch and control

When this switch is in the released position, the color saturation preset with the PRESET CHROMA control inside the right drawer is obtained. To adjust the color saturation manually, depress this switch and turn this control.

⑰ PHASE MANUAL switch and control

When this switch is in the released position, the subcarrier phase preset with the PRESET PHASE control inside the right drawer is obtained. To adjust the subcarrier phase manually, depress this switch and turn this control.

(This control is not effective when the COLOR STANDARD PAL button is pressed and the PAL D/S selector is set to D, or when the COLOR STANDARD SECAM button is pressed.)

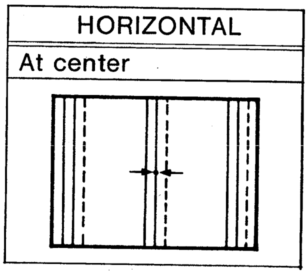


SONY
1
DEGAUSS
H.CENT
V.CENT
H.STAT
V.STAT
R
G
B
APT
BLUE ONLY
COMB TRAP
⑱ H.CENT control
⑲ V.CENT control
⑳ H.STAT control
㉑ V.STAT control
㉒ APT control

⑱ H.CENT (horizontal centering) control
Adjusts the horizontal position of the picture.

⑲ V.CENT (vertical centering) control
Adjusts the vertical position of the picture.

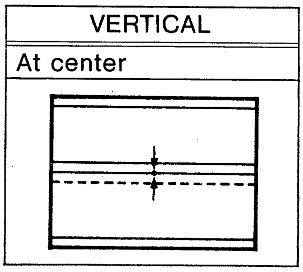
⑳ H.STAT (horizontal static) control
Adjusts the convergence of red and green in the horizontal direction at the screen center. Adjust the convergence of corresponding portion of the screen as follows:



HORIZONTAL
At center

When adjusting the convergence, observe the portion of the screen indicated by the →•← mark in the illustrations. The red and blue beams move symmetrically to the green beam.

㉑ V.STAT (vertical static) control
Adjusts the convergence of red and green in the vertical direction at the screen center. Adjust the convergence of corresponding portion of the screen as follows:

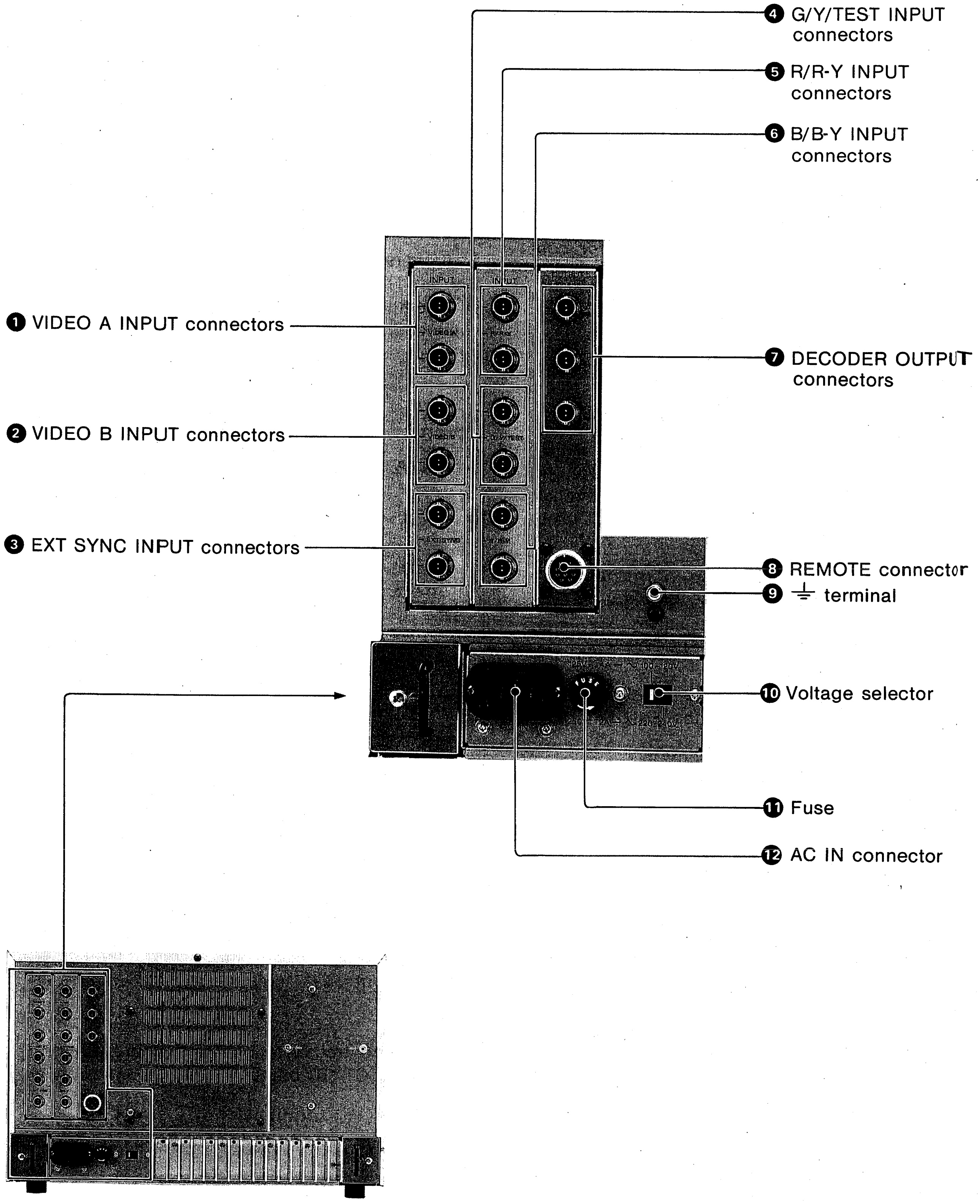


VERTICAL
At center

When adjusting the convergence, observe the portion of the screen indicated by the ↓•↑ mark in the illustrations. The red and blue beams move symmetrically to the green beam.

㉒ APT (aperture) control
Adjust the frequency response when the APT switch ⑤ on the front panel is depressed.

1-3-2. Rear Panel


④ G/Y/TEST INPUT connectors
⑤ R/R-Y INPUT connectors
⑥ B/B-Y INPUT connectors
① VIDEO A INPUT connectors
⑦ DECODER OUTPUT connectors
② VIDEO B INPUT connectors
③ EXT SYNC INPUT connectors
⑧ REMOTE connector
⑨ ⏚ terminal
⑩ Voltage selector
⑪ Fuse
⑫ AC IN connector
INPUT
INPUT
FUSE

❶ VIDEO A INPUT connectors (BNC)
❷ VIDEO B INPUT connectors (BNC)

Accept video signals. Use one connector for input and the other for loop-through output.
When the loop-through output is not used, attach a 75-ohm terminator.

❸ EXT SYNC INPUT (external sync input) connectors (BNC)

Accept sync signals.
Use one connector for input and the other for loop-through output.
When the loop-through output is not used, attach a 75-ohm terminator.

❹ G/Y/TEST INPUT connectors (BNC)
❺ R/R-Y INPUT connectors (BNC)
❻ B/B-Y INPUT connectors (BNC)

Input an RGB, component (Y, R-Y, B-Y) or test signal. The input signal can be selected with the INPUT SELECT buttons on the sub control panel. Use one connector for input and the other for loop-through output. When the loop-through output is not used, attach a 75-ohm terminator.

❼ DECODER OUTPUT connectors (BNC)

These connectors provide RGB or component (Y, R-Y, B-Y) outputs decoded from the signals displayed on the screen, only when the BKM-1440 (RGB/component adaptor) is installed.
The RGB or component outputs are selected with the S1 selector on the BF board of the BKM-1440 kit.

Quick reference for output selection

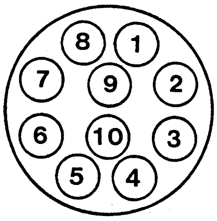
Output signal / Operation	Component	RGB
S1 selector on BF board	Upper position	Lower position
Input signal	Encoded VIDEO A, VIDEO B, TEST or component	
Output connectors	DECODER OUTPUT (R/R-Y, G/Y, B/B-Y)	

Notes

- The DECODER OUTPUT connectors do not provide the correct RGB outputs from the displayed RGB signals. For RGB outputs, use the loop-through outputs of the R/G/B input connectors.
- The outputs from non-composite signals are also non-composite. Supply sync signals from the EXT SYNC INPUT connector if required.
- The output signals are affected by the CHROMA, PHASE and APT controls and MATRIX switch.
- The color killer is not activated for output signals.

❽ REMOTE connector (10-pin)

Use the supplied 10-pin connector.



To enter remote control mode, short-circuit pin No. 5 with pin No. 8.
The relationship between the function and pin connections in remote control mode are shown below.

Function			Pin No.						
INPUT*	SYNC*	MODE*	1	2	3	4	5	6	7
VIDEO A	INT	AUTO	O	O	—	O	S	—	—
		MONO	S	O	—	O	S	—	—
	EXT	AUTO	O	O	—	S	S	—	—
		MONO	S	O	—	S	S	—	—
VIDEO B	INT	AUTO	O	S	—	O	S	—	—
		MONO	S	S	—	O	S	—	—
	EXT	AUTO	O	S	—	S	S	—	—
		MONO	S	S	—	S	S	—	—
VITC OFF**			—	—	—	—	—	S	—
VITC HOLD**			—	—	—	—	—	O	S
TALLY ON			—	—	S	—	—	—	—

S: Short-circuit with pin No. 8.
O: Open
—: Either S or O.

* Remote control operations have priority over the MODE, INPUT and SYNC selectors on the front panel.

** To remotely control the VITC display, first set the VITC switch inside the right drawer to ON and then short-circuit pin 6 or 7 with pin 8. (For VITC display, the optional BKM-1460 is required.)

Note

For remote control operations, be sure to depress the INPUT SELECT "B" button inside the right drawer.

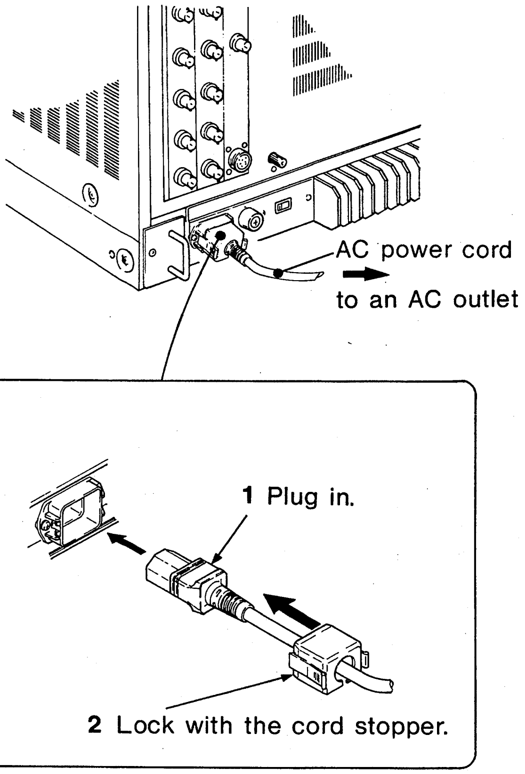
❾ Ground (⏚) terminal

Connect to the system ground, if necessary.

⑩ Voltage selector
Set to the local power line voltage, 220 – 240V AC or 100 – 120V AC.

⑪ Fuse
Use a T2A fuse for operation on 220 – 240V AC, or a 4A fuse for operation on 100 – 120V AC.

⑫ AC IN connector
Connect the supplied AC power cord here and secure it with the supplied cord stopper.


AC power cord
to an AC outlet
1 Plug in.
2 Lock with the cord stopper.

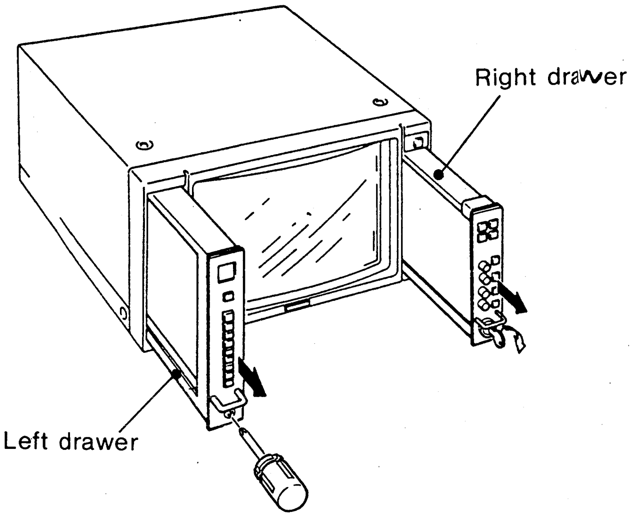
1-3-3. Sub Control Panels inside the Drawers

The right drawer

Insert the supplied key into the keyhole of the drawer lock, turn it 90° clockwise and pull the drawer out.

The left drawer

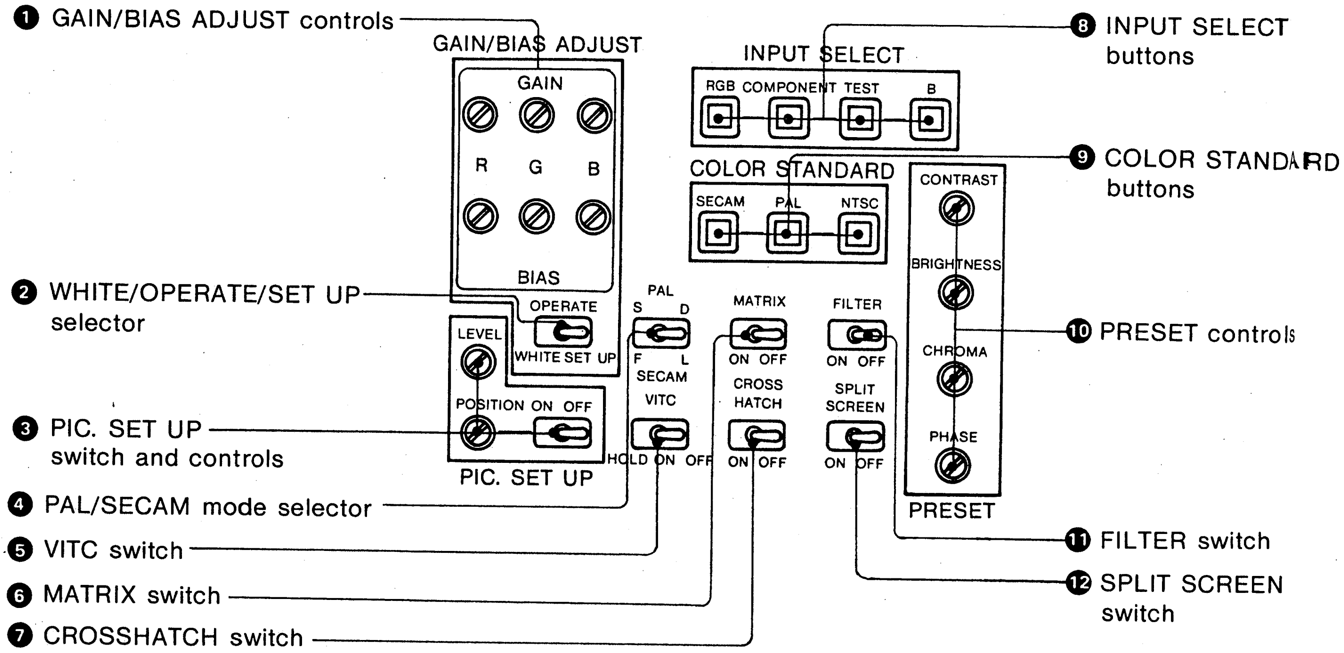
Unlock the lock-screw using a screwdriver and pull the drawer out.


Right drawer
Left drawer

- Adjust the controls on the sub control panel when the monitor is fully warmed up. Warm-up time will be at least 30 minutes after the power has been turned on.
- Adjust the control using the supplied screwdriver.

Inside the right drawer

HB board (Function selection and white balance adjustment section)


① GAIN/BIAS ADJUST controls
② WHITE/OPERATE/SET UP selector
③ PIC. SET UP switch and controls
④ PAL/SECAM mode selector
⑤ VITC switch
⑥ MATRIX switch
⑦ CROSSHATCH switch
⑧ INPUT SELECT buttons
⑨ COLOR STANDARD buttons
⑩ PRESET controls
⑪ FILTER switch
⑫ SPLIT SCREEN switch
GAIN/BIAS ADJUST
GAIN
R
G
B
BIAS
OPERATE
WHITE SET UP
LEVEL
POSITION ON OFF
PIC. SET UP
INPUT SELECT
RGB
COMPONENT
TEST
B
COLOR STANDARD
SECAM
PAL
NTSC
PAL
S
D
F
L
SECAM
VITC
HOLD ON OFF
MATRIX
ON OFF
CROSS HATCH
ON OFF
FILTER
ON OFF
SPLIT SCREEN
ON OFF
CONTRAST
BRIGHTNESS
CHROMA
PHASE
PRESET

① GAIN/BIAS ADJUST controls

Used for white balance adjustment.

GAIN and BIAS controls are provided for the R (red), G (green) and B (blue) screens.

BIAS: Set the WHITE/OPERATE/SET UP selector to SET UP and adjust the white balance and brightness of the screen at the lowlight with these controls.

GAIN: Set the WHITE/OPERATE/SET UP selector to WHITE and adjust the white balance and contrast of the screen at the highlight with these controls. For details on the white balance adjustment, refer to "1-4. WHITE BALANCE ADJUSTMENT" on page 1-14.

② WHITE/OPERATE/SET UP selector

OPERATE: Normally set to this position for normal monitoring.

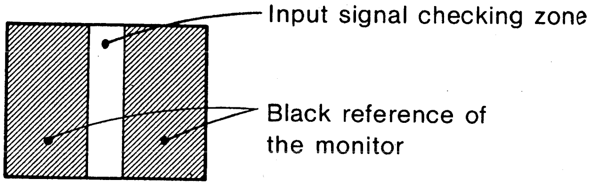
WHITE: When adjusting the white balance at the highlight, set to this position. Internal 100% white signal is displayed on the screen.

SET UP: When adjusting the white balance at the lowlight, set to this position. A horizontal white bar of approximately 1/3 the screen height is displayed.

③ PIC. SET UP (picture set up) switch and controls

Used to match the black reference of the monitor with the black level of the input signal.

ON/OFF switch: When this switch is set to ON, a vertical picture band and the black reference of the monitor are displayed on the screen for easy level comparison.


Input signal checking zone
Black reference of the monitor

POSITION control: Move the position of the picture band horizontally so that the black signal of the picture is located next to the black reference area.

LEVEL control: Adjust this control to match the brightness of the black reference area with that of the input black signal.

❹ PAL/SECAM mode selector

This selector functions as the PAL D/S selector for PAL color system, and as the SECAM F/L selector for SECAM color system.

PAL D/S selector: Selects the demodulation mode of the PAL system, D (deluxe) or S (simple). Normally set to D.

SECAM F/L selector: Selects the ID signal of the SECAM system, L (line) or F (field). Normally set to L.

❺ VITC (Vertical Interval Time Code) switch

This switch functions only when the optional BKM-1460 (VITC ADAPTOR) is installed.

ON: Set to this position to display the VITC.

OFF: To turn off the VITC display.

HOLD: To hold the VITC figure, press the switch momentarily to this position. To run the VITC again, press the switch to this position again.

❻ MATRIX switch

Normally set this switch to OFF. Set to ON to activate the matrix circuit so that the chromaticity of the displayed picture more closely approximates to that of "true" NTSC phosphors.

❼ CROSSHATCH switch

Set to ON to display the internal crosshatch pattern for adjusting convergence, etc.

The crosshatch pattern is synchronized to the selected composite sync signal.

❽ INPUT SELECT buttons

To monitor one of the following four input signals, depress the INPUT B selector on the front panel and press the appropriate button.

RGB: To monitor the R/G/B signals connected to the R/R-Y, G/Y/TEST and B/B-Y connectors

COMPONENT: To monitor the component (R-Y, Y and B-Y) signals connected to the R/R-Y, G/Y/TEST and B/B-Y connectors

TEST: To monitor the composite video signals connected to the G/Y/TEST connector

B: To monitor the composite video signals connected to the VIDEO B INPUT connector

Quick reference for input selection

Input signal / Operation	Encoded video			Component	RGB
	VIDEO A	VIDEO B	TEST		
INPUT selectors (front panel)	A	B	B	B	B
INPUT SELECT buttons (right drawer)		B	TEST	COMPONENT	RGB
INPUT connectors	VIDEO A	VIDEO B	G/Y/TEST	R/R-Y, G/Y/TEST, B/B-Y	R/R-Y, G/Y/TEST, B/B-Y

❾ COLOR STANDARD buttons

Select the color standard of the input picture.

For displaying the picture of each color standard, the appropriate decoder board (optional) should be installed. See page 1-2.

SECAM: For SECAM standard

PAL: For PAL or PAL-M standard

NTSC: For NTSC standard

Note

If the decoder board for the selected color system is not installed:

- The picture does not appear on the screen when the FILTER switch ⓫ is set to ON.
- The picture is displayed in monochrome mode when the FILTER switch is set to OFF.

❿ PRESET controls

Adjust the preset levels.

CONTRAST: Preset the picture contrast level.

BRIGHTNESS: Preset the picture brightness level.

CHROMA: Preset the color saturation level.

PHASE: Preset the subcarrier phase.

⓫ FILTER switch

This switch functions only when the MODE selector on the front panel is set to MONO.

Normally set to ON to activate the comb or trap filter. Set to OFF to deactivate the filter for a wider frequency range.

- When the MODE selector is set to AUTO, the filter is always activated for color signals regardless of this switch setting.

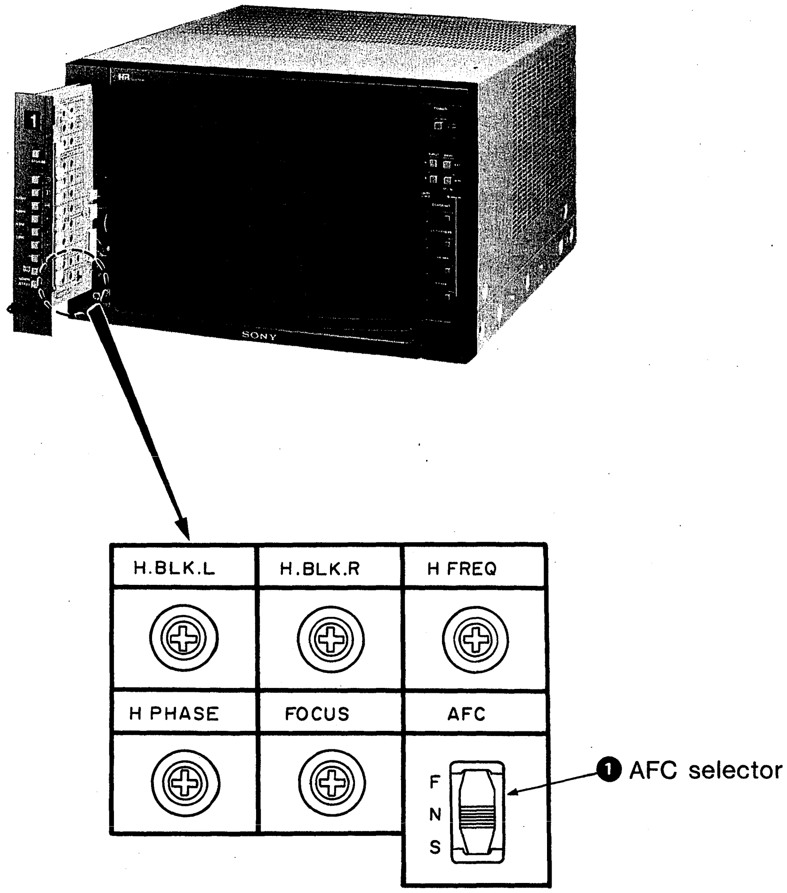
⓬ SPLIT SCREEN switch

Normally set to OFF. When this switch is set to ON, the lower half of the picture is displayed in monochrome mode.

Inside the left drawer

DA board

In DA board, the explanation is limited to the AFC selector.


H.BLK.L
H.BLK.R
H FREQ
H PHASE
FOCUS
AFC
F
N
S
① AFC selector

① **AFC (automatic frequency control) selector**
Selects the AFC time constant.

F (fast): This mode is fast enough to correct for VTR jitter. Set to this position to obtain a stable playback picture from a VTR.

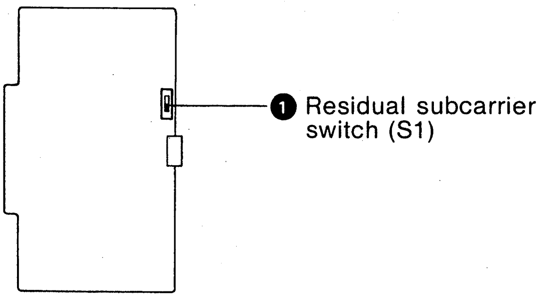
N (normal): Normally set to this position.

S (slow): This mode is slow enough to display the time base instability introduced by mechanical jitter, in the VTR playback signal.

1-3-4. Switches inside the Cabinet

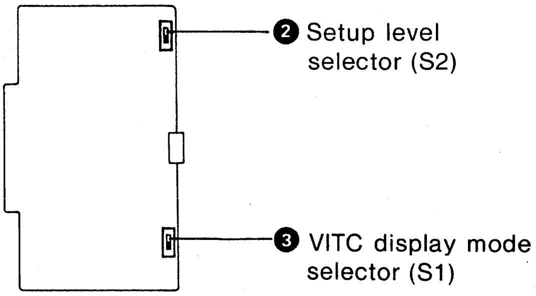
Remove the cabinet, referring to Section 2.

BJ board



❶ Residual subcarrier switch (S1)
This switch is factory-preset to the lower position (OFF).
Normally there will be no residual subcarrier in input video signals. However, if a residual subcarrier is present, this may affect the display.
Set this switch to the upper position (ON) to check if a residual subcarrier is present. If it is present in the incoming signal, color shift appears in the picture.

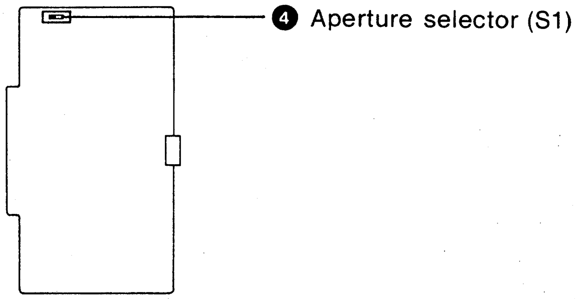
BH board


❷ Setup level selector (S2)
❸ VITC display mode selector (S1)

❷ Setup level selector (S2)
Select the setup level.
0 IRE: Setup level is 0%.
AUTO: Factory-preset position. Setup level is 0% when the field frequency of the input signal is 50 Hz, and 7.5% when the field frequency is 60 Hz.
7.5 IRE: Setup level is 7.5%.
The setup level can be adjusted with the controls on the BH board: 0% level with the RV1 control, and 7.5% level with the RV2 control in the range from −2.5% through +12.5%.

❸ VITC display mode selector (S1)
Used to invert the character and background colors.
Upper position: Factory-preset position. The VITC is displayed in white characters with black background.
Lower position: The VITC is displayed in black characters with white background.
For details, refer to the operation and maintenance manual of the BKM-1460 (VITC ADAPTOR).

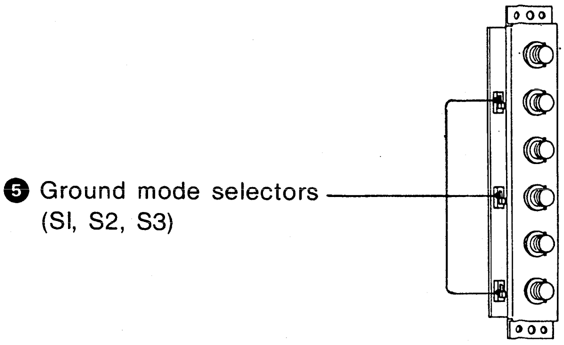
BG board



❹ Aperture selector (S1)
Selects the boost frequency, 4.5 MHz or 6.5 MHz, for aperture correction. This selector is factory-preset to 4.5 MHz.

QA and QB boards

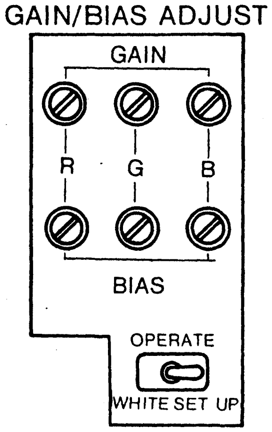
The QA and QB boards are located behind the INPUT connector panels.
Remove the INPUT connector panels, referring to Section 2.



❺ Ground mode selectors (S1, S2, S3)
Three selectors are provided for each VIDEO A, VIDEO B and EXT SYNC connectors (QA board), or for each R/R-Y, G/Y/TEST and B/B-Y connectors (QB board).
S (non-floating): Factory-preset position. Normally keep the selectors at this position.
F (floating): When there is hum in the input signal, set to this position.. Common mode noises will be rejected.

1-4. WHITE BALANCE ADJUSTMENT

Use the WHITE/OPERATE/SET UP selector and GAIN/BIAS ADJUST controls on the HB board inside the right drawer. During adjustment, turn the red, green and blue beams on and off with the SCREEN switches on the front panel, as required.



1 Display a test signal on the screen.
2 Set the WHITE/OPERATE/SET UP selector to SET UP.
3 Adjust the white balance at the lowlight with the BIAS controls.
4 Set the WHITE/OPERATE/SET UP selector to WHITE.
5 Adjust the white balance at the highlight with the GAIN controls.
6 After adjustment, set the WHITE/OPERATE/SET UP selector to OPERATE.

Note
For white balance adjustment using a color analyzer or equivalent, see Section 2.

1-5. SPECIFICATIONS

System	**BVM-1315** 525 lines per picture, 60 fields per second interlaced, NTSC **BVM-1415P** 625 lines per picture, 50 fields per second interlaced, PAL **BVM-1415PM** 525 lines per picture, 60 fields per second interlaced, PAL-M
CRT	Super Fine Pitch Trinitron 0.25 mm aperture grille, 90-degree deflection, ϕ29 mm in-line gun Effective picture size: 200.3 × 267.2 mm (h/w) (8 × 10⅝ inches) 330.8 mm (13 inch) picture measured diagonally

Input

Connectors	BNC type (12)
Video	VIDEO A/B, TEST, R/G/B 0.714 Vp-p, non-composite (BVM-1315, 1415PM), 0.7 Vp-p, non-composite (BVM-1415P) or 1 Vp-p, composite, video signal ±6 dB positive, high impedance, with loop-through output Y/R-Y/B-Y Y: Composite, 1.0 Vp-p ±6 dB, high impedance, loop-through R-Y/B-Y: 0.7 Vp-p±6 dB (BVM-1315, 1415PM), EBU N-10 LEVEL (BVM-1415P), high impedance, loop-through
Sync	EXT SYNC 1 - 8 Vp-p negative, high impedance, with loop-through output
Return loss	More than 46 dB (7 MHz with 75-ohm termination)
Hum rejection	Reduced by more than 50 dB Maximum hum: Less than 4 Vrms, where hum is applied to the monitor in floating ground mode

Output

Connectors	DECODER OUT: BNC type (3) REMOTE: 10-pin connector (1)

Video signal

Luminance channel (RGB and composite signals)	
Differential gain	Within 5% for a luminance from 0 to 40 fL
Differential phase	Within 5° for a luminance from 0 to 40 fL
Frequency response	Monochrome mode: 100 Hz to 6 MHz ±1 dB (aperture correction at 0) Color mode: Trap filter removes frequency in 4.43 MHz region (BVM-1415P) or 3.58 MHz region (BVM-1315, BVM-1415PM).
Chrominance channel	
Demodulation axis	R−Y, B−Y
Bandpass	1.3 MHz equiband
Subcarrier regeneration	±1° (standard input signal)
Phase control range	More than ±15° (standard input signal)
Chroma gain control range	More than ±6 dB
Chrominance/luminance	
Time error	Less than 30 nsec
Gain error	Less than 5%
Aperture correction	Adjustable continuously up to 6 dB boost at 4.5 MHz or 6.5 MHz (selectable)
DC restoration (RGB and composite signals)	Back porch type Back porch level: Within 1% of peak luminance, 10% to 90% APL (average picture level)

Synchronization

AFC time constant	0.5 msec: FAST 2 msec: NORMAL 7 msec: SLOW
Line pull range/line hold range	More than ±500 Hz at 0.5 msec time constant
Vertical blanking time	Normal: Within 1 msec. Underscan: Within 0.8 msec.
Horizontal retrace time	Within 10 μsec.

Picture performance

Normal scan	5% overscan of CRT effective screen area (adjustable range more than ±15%)
Underscan	3% underscan of CRT effective screen area (adjustable range more than ±15%)

Linearity	Within a central area bounded by a circle whose diameter equals the picture height, within 1% of the picture height, out of area 2%
Color temperature	D6500, adjustable to other color temperatures

Nominal chromaticity coordinates

BVM-1315

SMPTE C phosphor

	x	y
Red	0.630	0.340
Green	0.310	0.595
Blue	0.155	0.070

BVM-1415P, BVM-1415PM

EBU standard phosphor

	x	y
Red	0.64	0.33
Green	0.29	0.60
Blue	0.15	0.06

Convergence error	Central area: Less than 0.5 mm Periphery: Less than 1.0 mm
Preset contrast	40 fL at peak white of standard 1 Vp-p signal
Raster size stability	Less than 1% picture height, 0% to 100% APL at 40 fL peak luminance
Scan delay	Horizontal: Approx. ¼ line Vertical: Approx. ½ field
Resolution	More than 600 TV lines (center, at 40 fL luminance)

Environment

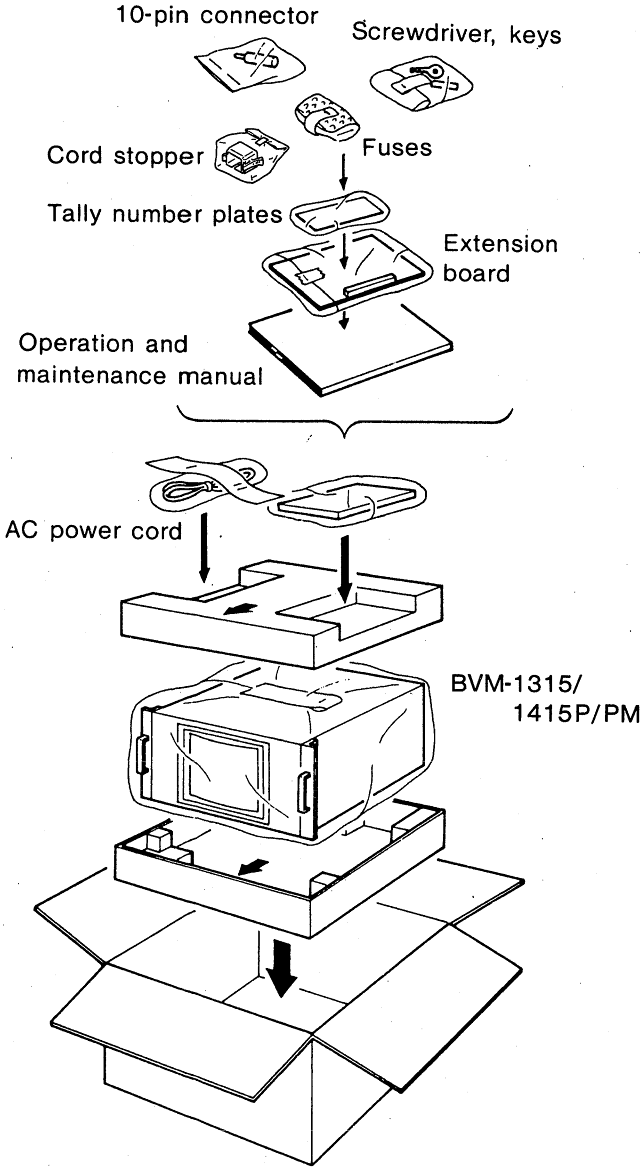
Operating temperature	0 to 40°C (32 to 104°F)
Optimum temperature range	20 to 30°C (68 to 86°F)
Humidity	0 to 90%
Altitude	Approx. 3,050 m (10,000 feet)

General

Picture tube protection	EHT (Extremely High Tension) is shut off in the event of scan failure.
Warm up	30 minutes to meet specifications
Anode voltage	Properly adjusted HV 25 kV at zero beam current
Power consumption	Typical: 125W Maximum: 155W
Power requirements	220 – 240 or 100 – 120V AC ±10%, adjustable, 50/60 Hz
Dimensions	426 × 281.5 × 489 mm (w/h/d) (16⅞ × 11⅛ × 19⅜ inches) incl. projecting parts and controls
Weight	28.5 kg (61 lb 12 oz)
Supplied accessories	AC power cord (1) Cord stopper (1) Screwdriver (for adjustment) (1) Drawer keys (2) Extension board (1) 10-pin connector (1) Fuses (3) Tally number plates (1 set) Operation and maintenance manual (1)

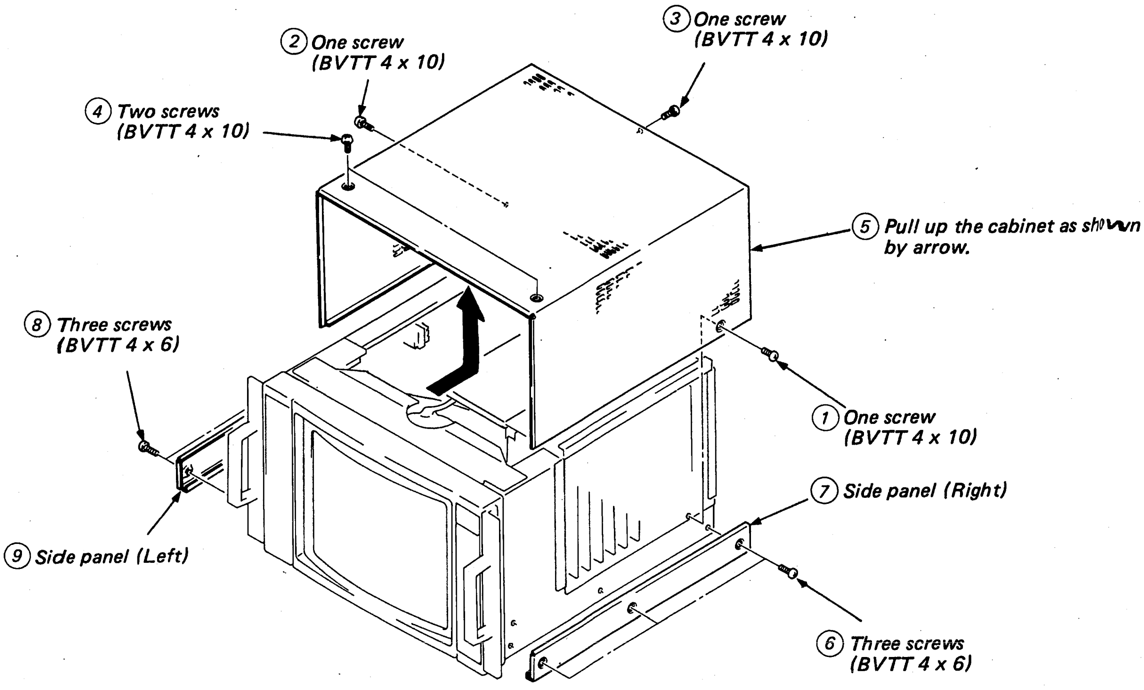
Design and specifications subject to change without notice.

1-6. PACKING

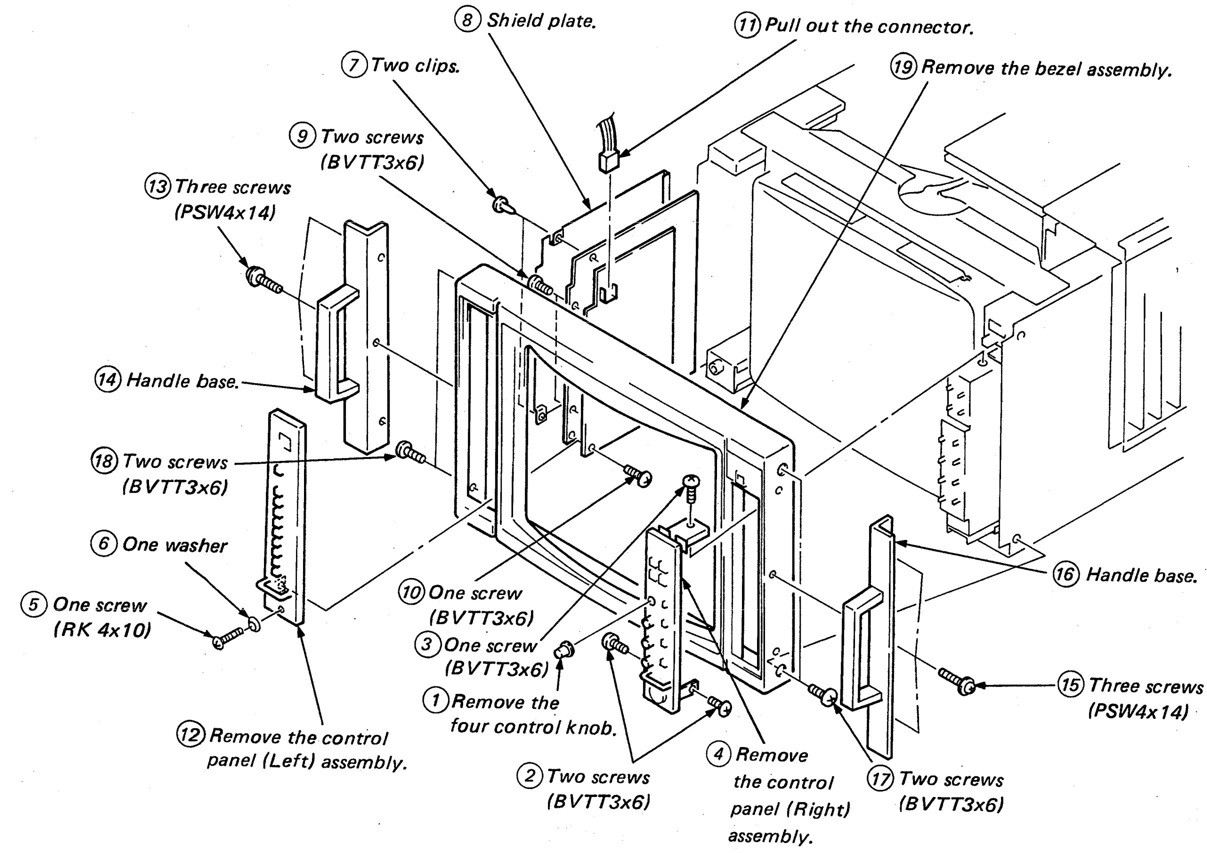

10-pin connector
Screwdriver, keys
Cord stopper
Fuses
Tally number plates
Extension board
Operation and maintenance manual
AC power cord
BVM-1315/ 1415P/PM

SECTION 2
DISASSEMBLY

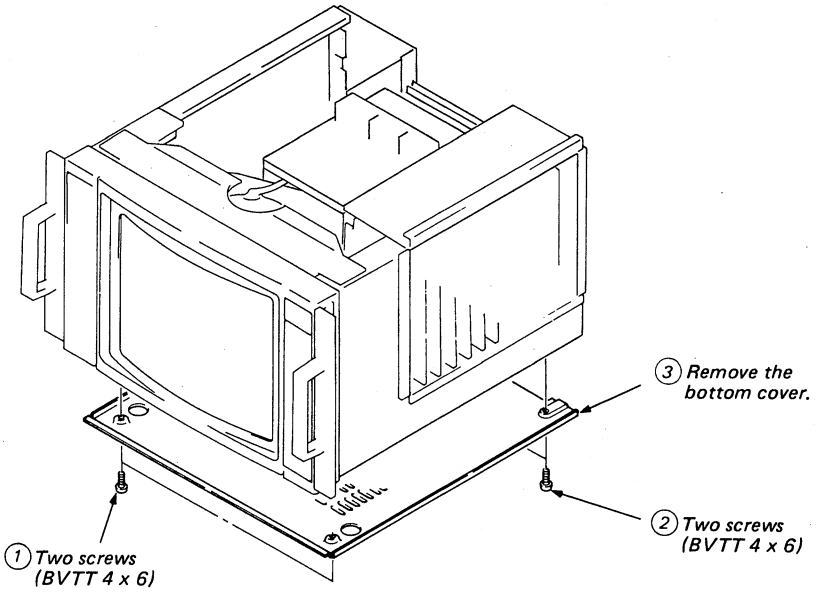
2-1. CABINET REMOVAL AND THE SIDE PANELS


② One screw (BVTT 4 x 10)
③ One screw (BVTT 4 x 10)
④ Two screws (BVTT 4 x 10)
⑤ Pull up the cabinet as shown by arrow.
⑧ Three screws (BVTT 4 x 6)
① One screw (BVTT 4 x 10)
⑦ Side panel (Right)
⑨ Side panel (Left)
⑥ Three screws (BVTT 4 x 6)

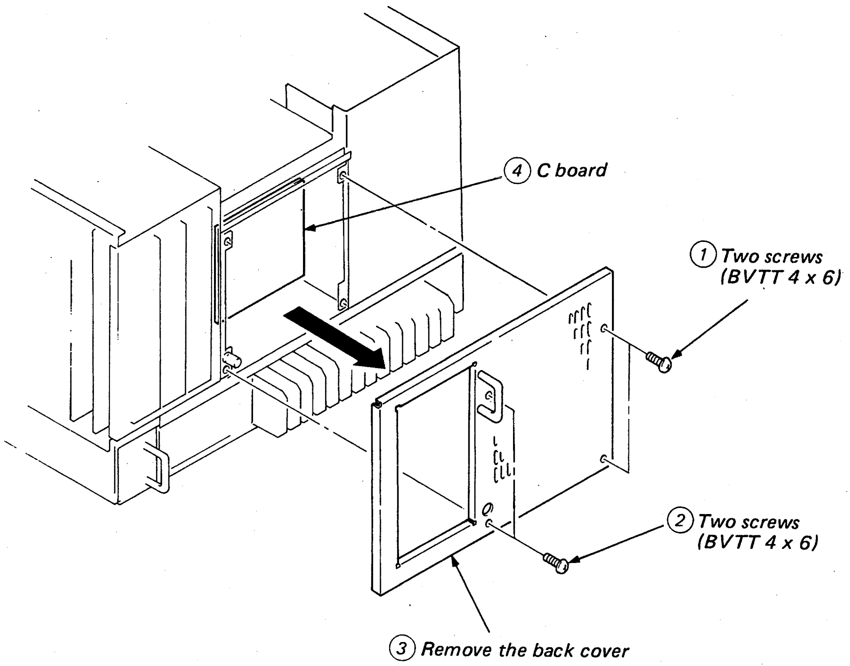
2-2. BEZEL ASSEMBLY REMOVAL


⑧ Shield plate.
⑪ Pull out the connector.
⑦ Two clips.
⑲ Remove the bezel assembly.
⑨ Two screws (BVTT3x6)
⑬ Three screws (PSW4x14)
⑭ Handle base.
⑱ Two screws (BVTT3x6)
⑥ One washer
⑤ One screw (RK 4x10)
⑩ One screw (BVTT3x6)
③ One screw (BVTT3x6)
① Remove the four control knob.
⑫ Remove the control panel (Left) assembly.
⑯ Handle base.
⑮ Three screws (PSW4x14)
④ Remove the control panel (Right) assembly.
② Two screws (BVTT3x6)
⑰ Two screws (BVTT3x6)

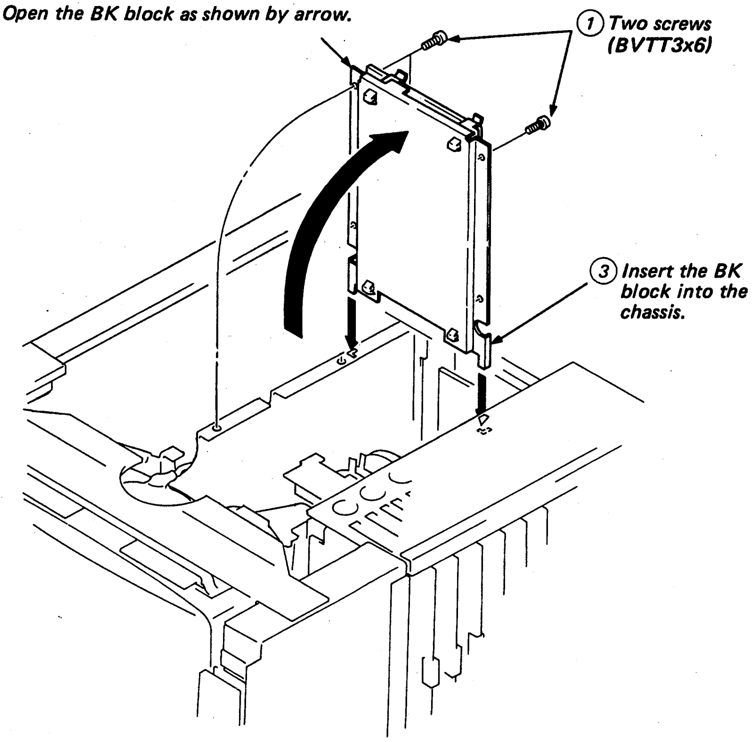
2-3. BOTTOM COVER REMOVAL


③ Remove the bottom cover.
② Two screws (BVTT 4 x 6)
① Two screws (BVTT 4 x 6)

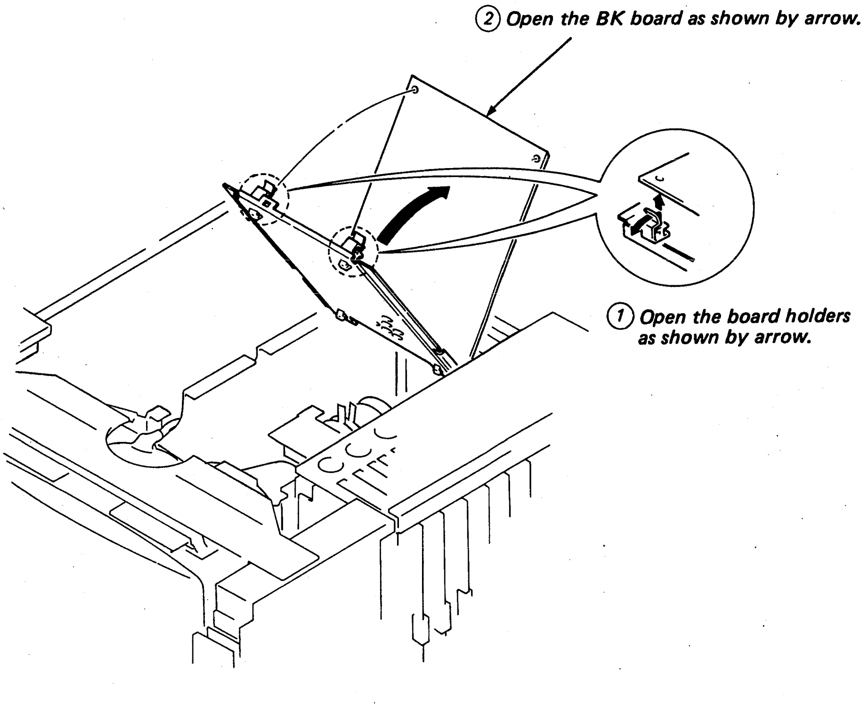
2-4. CHECK OF C BOARD


④ C board
① Two screws (BVTT 4 x 6)
② Two screws (BVTT 4 x 6)
③ Remove the back cover

2-5. BK BLOCK REMOVAL

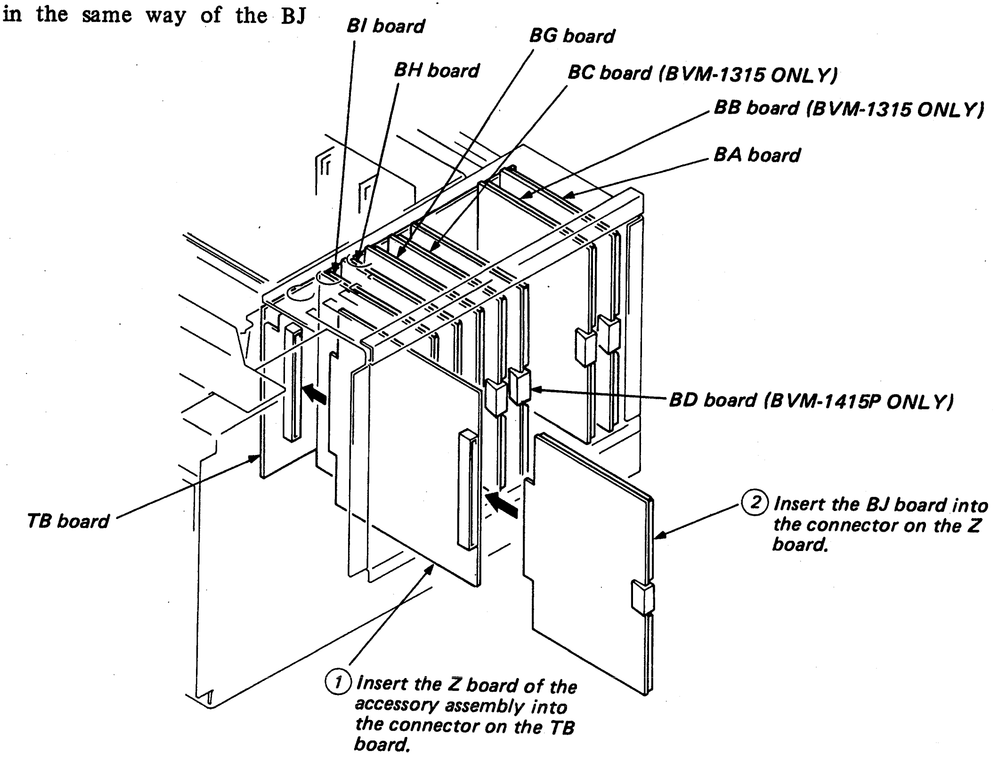

② Open the BK block as shown by arrow.
① Two screws (BVTT3x6)
③ Insert the BK block into the chassis.

2-6. CHECK OF BK BOARD

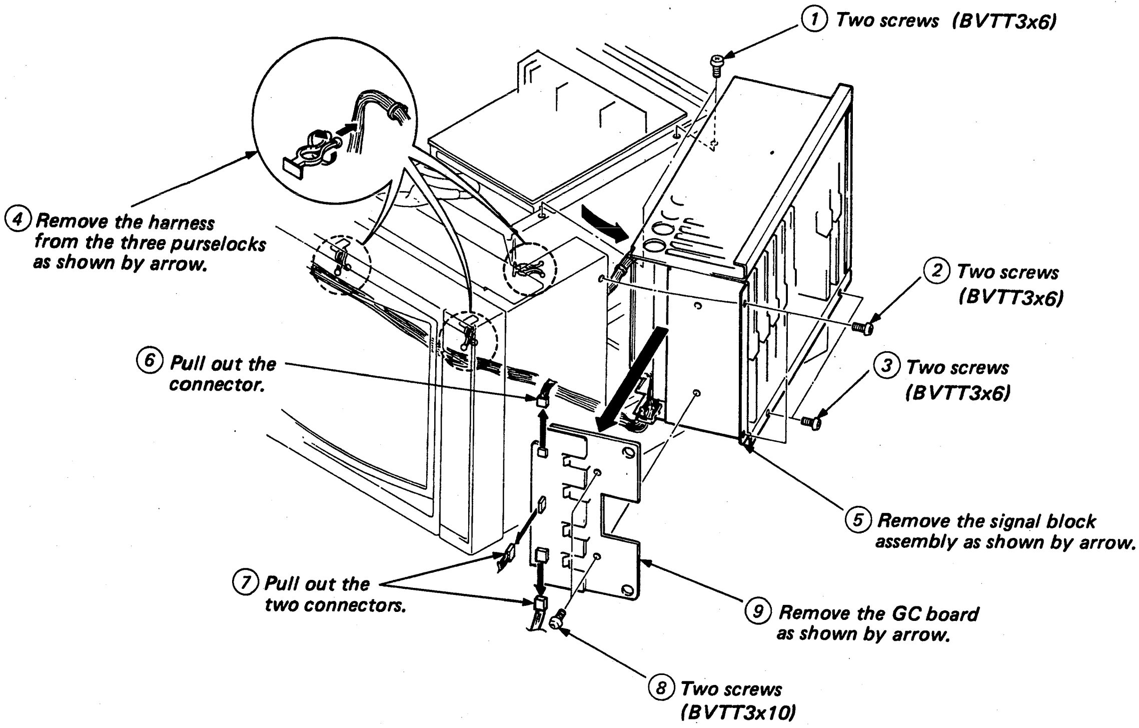

② Open the BK board as shown by arrow.
① Open the board holders as shown by arrow.

2-7. CHECK OF BA, BB, BC, BD, BG, BH, BI AND BJ BOARDS

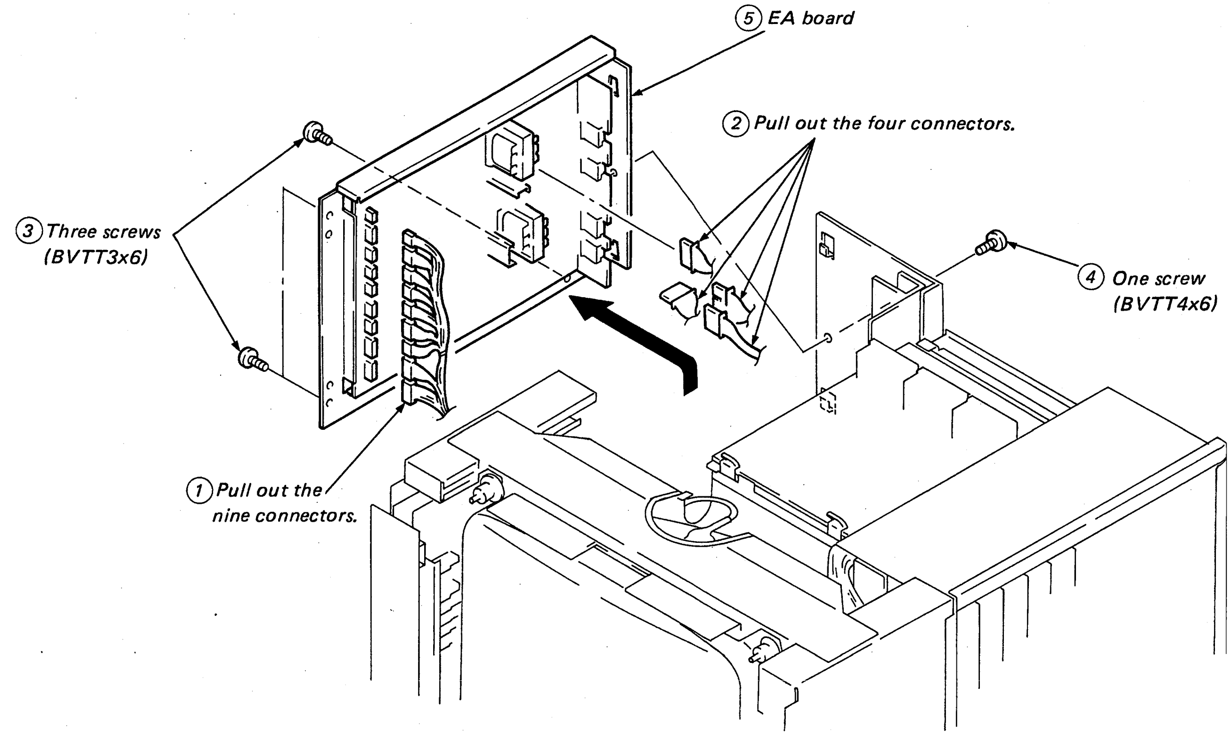
Note: The BA, BB, BC, BD, BG, BH and BI boards can be checked in the same way of the BJ board.


BI board
BG board
BH board
BC board (BVM-1315 ONLY)
BB board (BVM-1315 ONLY)
BA board
BD board (BVM-1415P ONLY)
TB board
② Insert the BJ board into the connector on the Z board.
① Insert the Z board of the accessory assembly into the connector on the TB board.

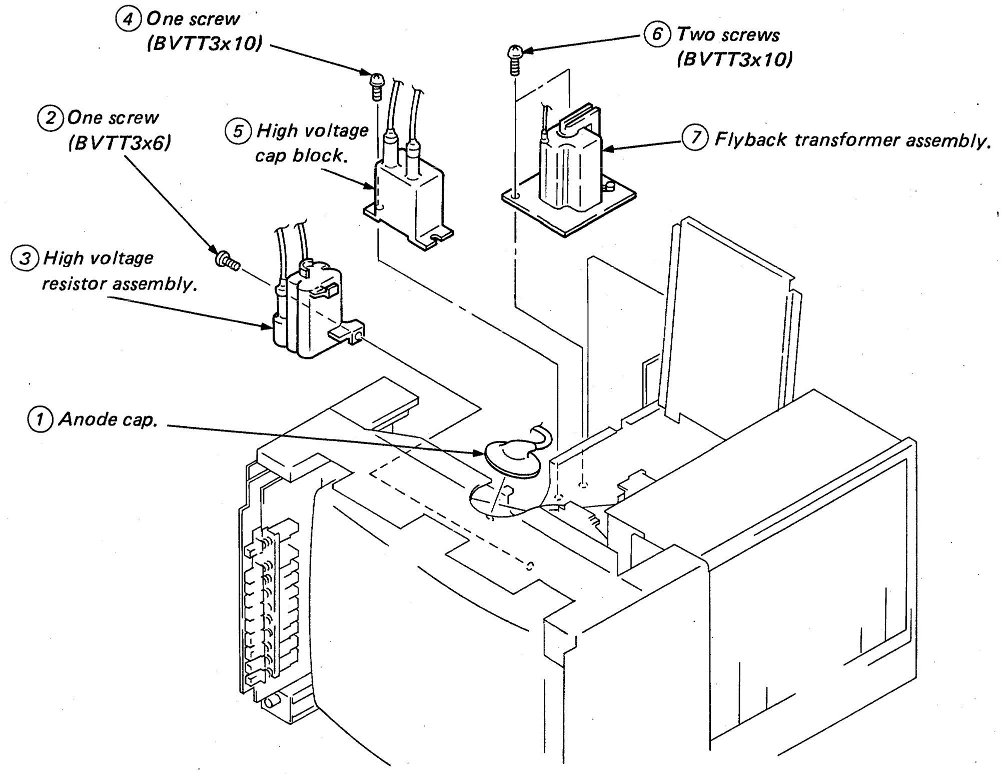
2-8. GC BOARD REMOVAL


① Two screws (BVTT3x6)
④ Remove the harness from the three purselocks as shown by arrow.
② Two screws (BVTT3x6)
⑥ Pull out the connector.
③ Two screws (BVTT3x6)
⑤ Remove the signal block assembly as shown by arrow.
⑦ Pull out the two connectors.
⑨ Remove the GC board as shown by arrow.
⑧ Two screws (BVTT3x10)

2-9. EA BOARD REMOVAL

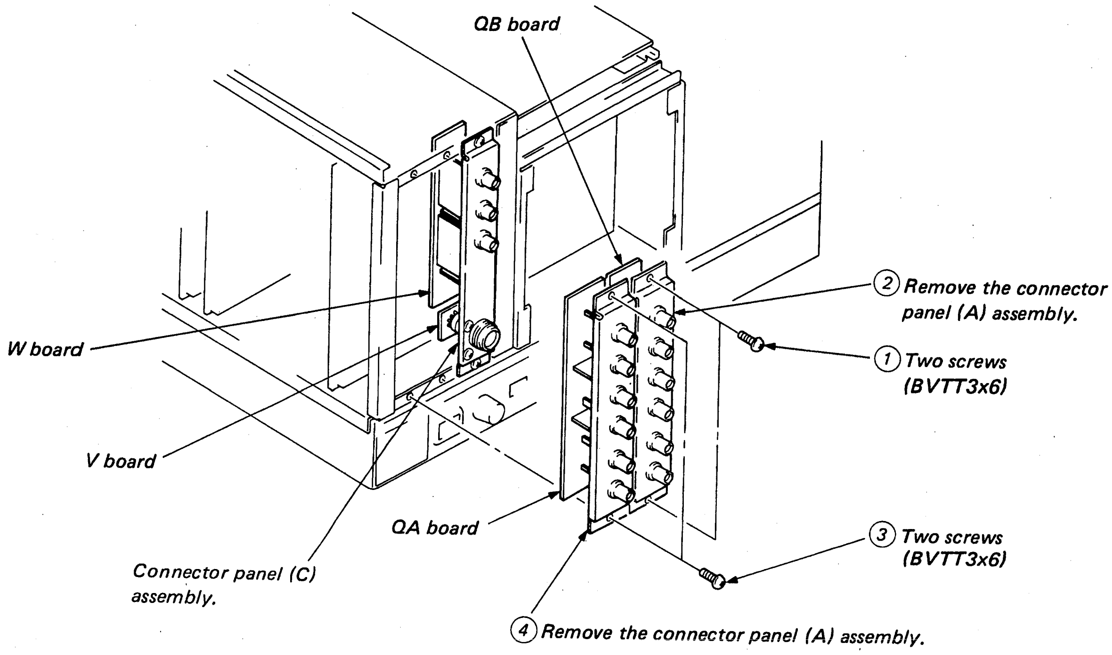

⑤ EA board
② Pull out the four connectors.
③ Three screws (BVTT3x6)
④ One screw (BVTT4x6)
① Pull out the nine connectors.

2-10. FLYBACK TRANSFORMER AND HIGH VOLTAGE BLOCK REMOVAL

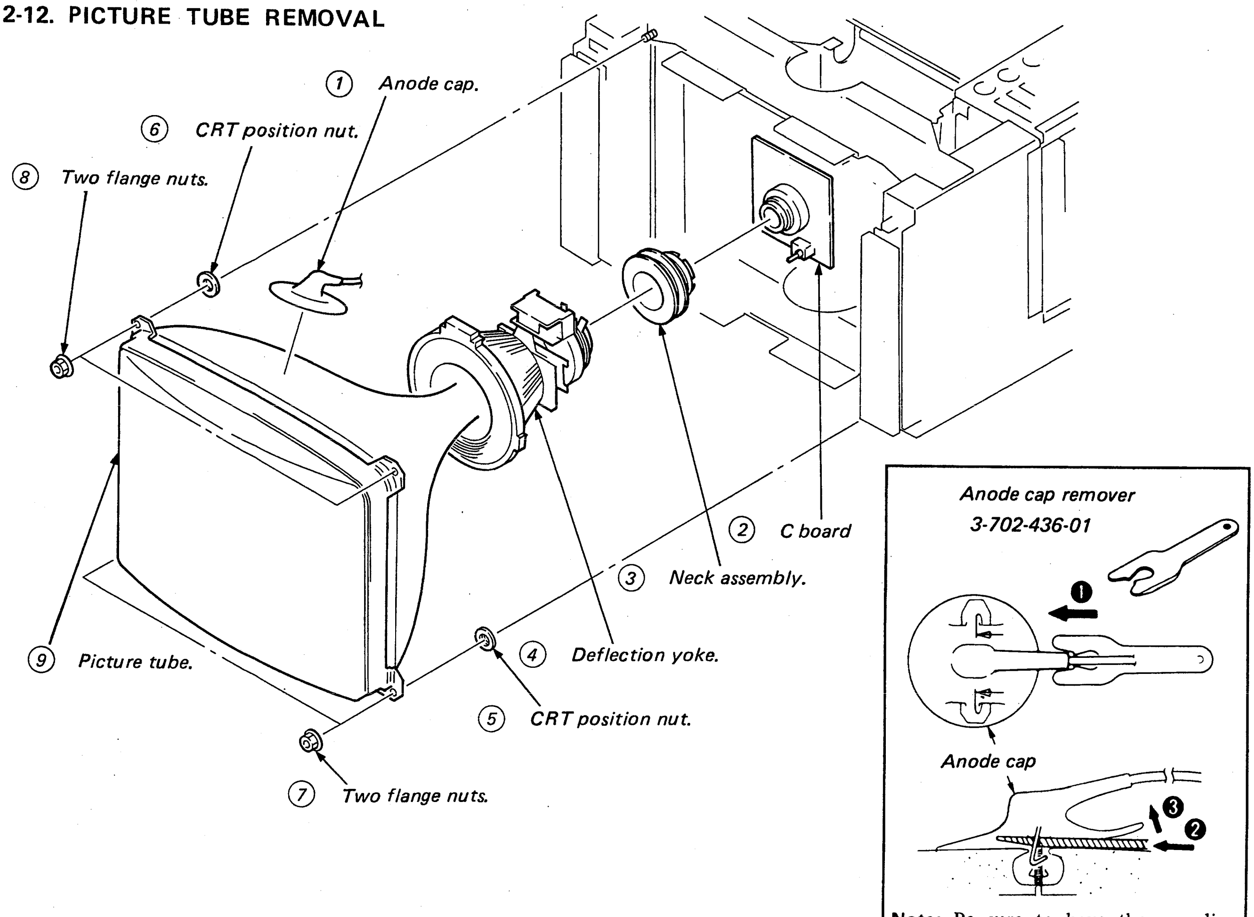

④ One screw (BVTT3x10)
⑥ Two screws (BVTT3x10)
② One screw (BVTT3x6)
⑤ High voltage cap block.
⑦ Flyback transformer assembly.
③ High voltage resistor assembly.
① Anode cap.

2-11. QA, W AND V BOARDS REMOVAL

Note: Connector panel (C) assembly can be removed in the same way.


QB board
② Remove the connector panel (A) assembly.
W board
① Two screws (BVTT3x6)
V board
QA board
③ Two screws (BVTT3x6)
Connector panel (C) assembly.
④ Remove the connector panel (A) assembly.

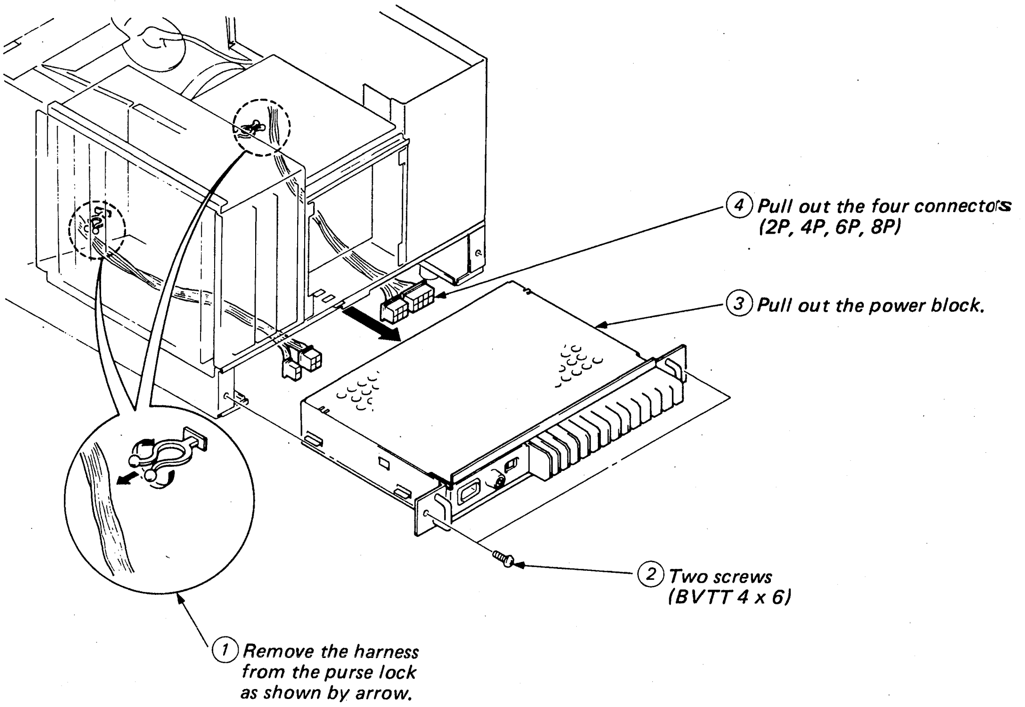
2-12. PICTURE TUBE REMOVAL


① Anode cap.
⑥ CRT position nut.
⑧ Two flange nuts.
② C board
③ Neck assembly.
④ Deflection yoke.
⑨ Picture tube.
⑤ CRT position nut.
⑦ Two flange nuts.
Anode cap remover
3-702-436-01
❶
Anode cap
❸
❷

Note: Be sure to have the cap discharged before working.

2-13. POWER BLOCK ASSEMBLY REMOVAL

Note: Remove the bottom cover before the follow operations.


④ Pull out the four connectors (2P, 4P, 6P, 8P)
③ Pull out the power block.
② Two screws (BVTT 4 x 6)
① Remove the harness from the purse lock as shown by arrow.

SECTION 3
CIRCUIT DESCRIPTIONS

3-1. QA, QB, BA BOARDS

3-1-1. Input Circuit

Cable Compensation (QA, QB)
CABLE COMPENSATION is composed of inductance L and capacitor C1 (Figure 1) in QA board and performs return loss compensation.
Grounding or floating in input terminal can be selected by switch S1.
On floating mode, common mode rejection can be performed.
QB board also has same function.

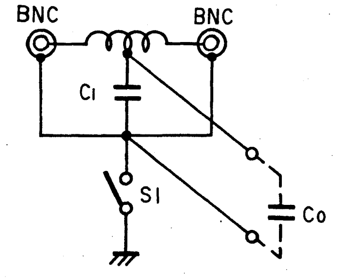

BNC
BNC
Ci
SI
Co

Figure 1

Hook Up Circuit (BA)
This circuit is composed of transistors Q101-105 and performs common mode rejection when SW S1 is selected to the floating mode.
In Figure 2, Gains of amplifier for input A and B are derived as follows.

$A = \frac{Rc}{Ri}$: Gain of amplifier for input A

$B = -\frac{Rc}{Ri}$: Gain of amplifier for input B

When input (ec + ei) is applied to input A and
input (ec − ei) to input B, then output eo is

$$eo = \frac{Rc}{Ri}(ec + ei) + \left(-\frac{Rc}{Ri}\right)(ec - ei) = 2\frac{Rc}{Ri}ei$$

This equation indicates that ec is eliminated and there is no common mode signal in output signal.
On hook up circuit, NF Amplifier (Negative Feedback) is used to get frequency response flat.

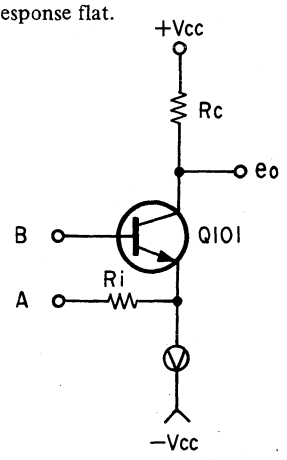

+Vcc
Rc
eo
B
Q101
Ri
A
−Vcc

Figure 2

Input Select Sw, Sync Select SW (BA)
For composite video signal, VIDEO A/B/TEST mode is selected by INPUT SELECT SW (IC1). For sync signal, INT SYNC/EXT SYNC is selected by SYNC SELECT SW IC2.

3-1-2. Sync AGC Circuit

This circuit is composed of following components; LPF (Low Pass Filter) (Q701), variable gain amplifier (Q702-Q705), bias control circuit (Q708-Q710), gain control circuit (Q711, 712) and amplifier (Q706, 707), Figure 3 shows block diagram of this circuit.
An inverted composite video signal or composite sync signal (eo) is derived at the collector of transistor Q707.
The bias control circuit compares maximum value of eo with base voltage of Q708 (E1) and controls bias of amplifier so that they match.
Also the gain control circuit compares pedestal level of eo with base voltage of Q711 (E2), and controls variable gain amplifier so that they match.

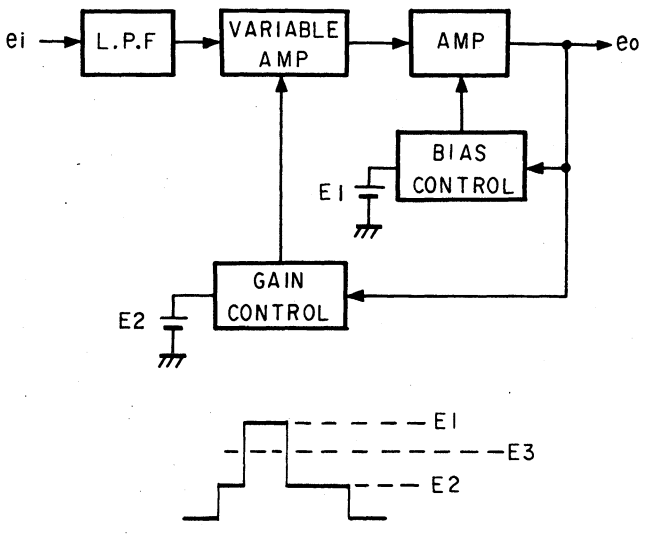
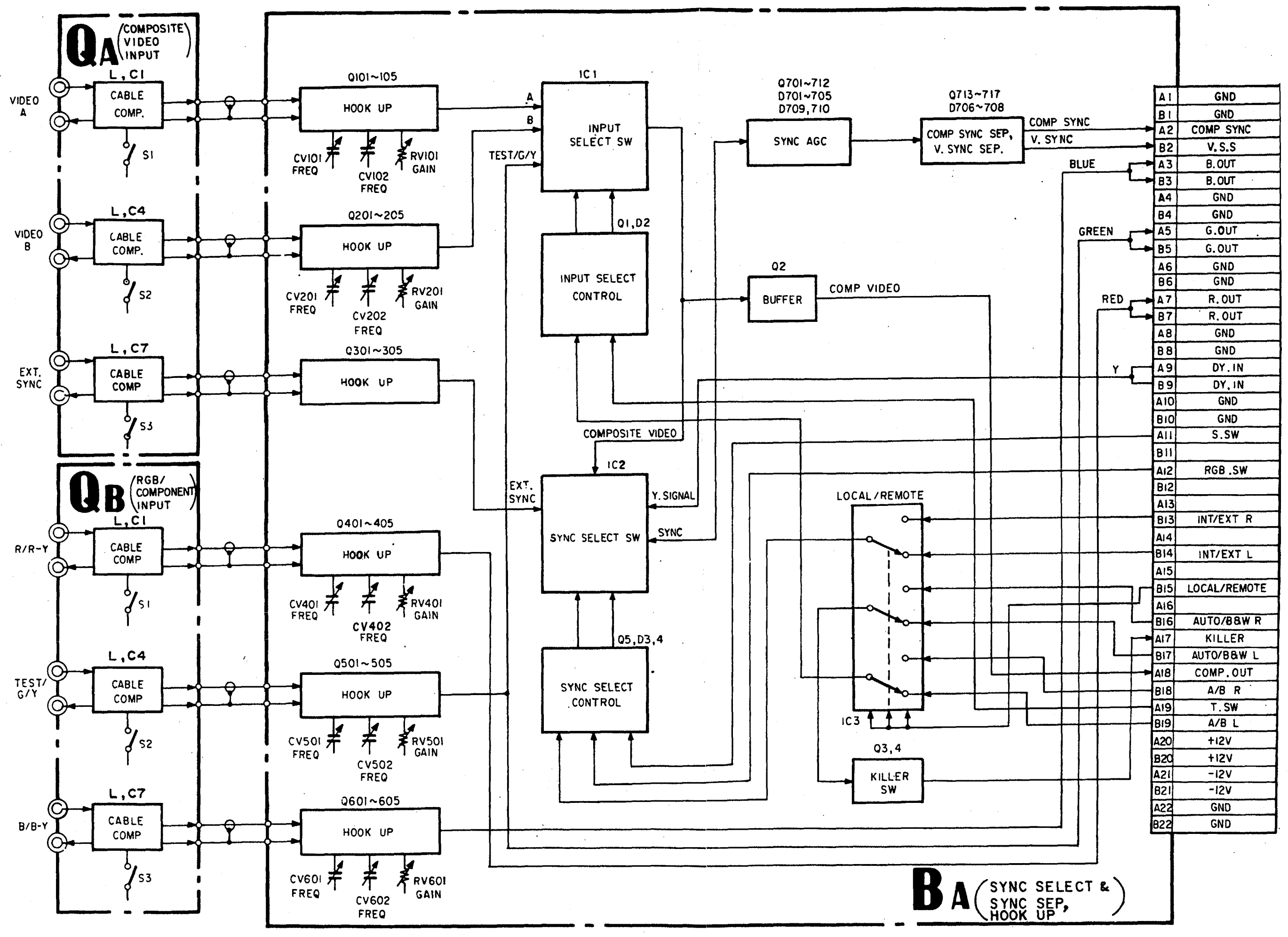

ei
L.P.F
VARIABLE AMP
AMP
eo
E1
BIAS CONTROL
E2
GAIN CONTROL
E1
E3
E2

Figure 3

Composite Sync Separation, Vertical Sync Separation
Composite sync is separated from composite video signal or composite sync by comparing voltage eo with the base voltage of transistor Q713 (E3).
Horizontal component in composite video signal or composite sync signal is removed by LPF (Low Pass Filter, Q716) and Vertical sync is separated by transistor Q717.

BLOCK DIAGRAM OF QA, QB, BA BOARDS


QA (COMPOSITE VIDEO INPUT)
QB (RGB/COMPONENT INPUT)
BA (SYNC SELECT & SYNC SEP, HOOK UP)
VIDEO A
VIDEO B
EXT. SYNC
R/R-Y
TEST/G/Y
B/B-Y
L, C1
L, C4
L, C7
CABLE COMP.
S1
S2
S3
Q101~105
Q201~205
Q301~305
Q401~405
Q501~505
Q601~605
HOOK UP
CV101 FREQ
CV102 FREQ
RV101 GAIN
CV201 FREQ
CV202 FREQ
RV201 GAIN
CV401 FREQ
CV402 FREQ
RV401 GAIN
CV501 FREQ
CV502 FREQ
RV501 GAIN
CV601 FREQ
CV602 FREQ
RV601 GAIN
IC1
A
B
TEST/G/Y
INPUT SELECT SW
Q1, D2
INPUT SELECT CONTROL
COMPOSITE VIDEO
IC2
EXT. SYNC
Y. SIGNAL
SYNC
SYNC SELECT SW
Q5, D3, 4
SYNC SELECT CONTROL
Q701~712
D701~705
D709, 710
SYNC AGC
Q713~717
D706~708
COMP SYNC SEP, V. SYNC SEP.
COMP SYNC
V. SYNC
BLUE
GREEN
RED
Y
Q2
BUFFER
COMP VIDEO
LOCAL/REMOTE
IC3
Q3, 4
KILLER SW
A1 GND
B1 GND
A2 COMP SYNC
B2 V.S.S
A3 B.OUT
B3 B.OUT
A4 GND
B4 GND
A5 G.OUT
B5 G.OUT
A6 GND
B6 GND
A7 R.OUT
B7 R.OUT
A8 GND
B8 GND
A9 DY.IN
B9 DY.IN
A10 GND
B10 GND
A11 S.SW
B11
A12 RGB.SW
B12
A13
B13 INT/EXT R
A14
B14 INT/EXT L
A15
B15 LOCAL/REMOTE
A16
B16 AUTO/B&W R
A17 KILLER
B17 AUTO/B&W L
A18 COMP.OUT
B18 A/B R
A19 T.SW
B19 A/B L
A20 +12V
B20 +12V
A21 −12V
B21 −12V
A22 GND
B22 GND

3-2. BG BOARD

3-2-1. Luminance Signal Circuit

Filter SW

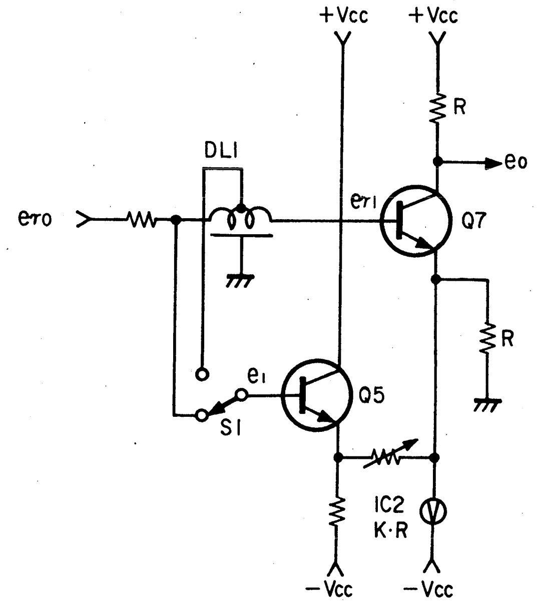
IC1 works as a selector switch of composite video signal or luminance signal derived from Y/C separation circuit. This IC activates by either FILTER-SW in right side drawer or killer signal.

Aperture Control

Aperture control circuit is composed of DL1 (delay line), transistors Q5, 7, 8 and IC2. IC2 operates as a variable resistor. Resistance value between Pin①and③is controlled by the potential between pin ③ and pin ④, also pin ① and pin ⑥.

Input signal: $e_{\tau 0}$,
Delayed signal by delay line: $e_{\tau 1}$
Second delayed signal: $e_{\tau 2}$

See Figure 4
e1 (at base of transistor Q5) is obtained as below due to the combination of direct wave and reflected wave by DL1.



+Vcc
+Vcc
R
eo
DLI
eτ1
Q7
eτo
R
e1
Q5
S1
IC2
K·R
−Vcc
−Vcc

Figure 4

$$e_1 = (e_{\tau 0} + e_{\tau 2})/2$$

Therefore eo is

$$e_o = -(\underbrace{e_{\tau 1}}_{\text{1st term}} + \frac{1}{K}\underbrace{(e_{\tau 1} - \frac{1}{2}(e_{\tau 0} + e_{\tau 2}))}_{\text{2nd term}})$$

K: variable constant

In the above equation, 1st term shows waveform A in Figure 5 and 2nd term shows waveform B. When K is variable, amount of pre-shoot and overshoot can be varied.
Switch S1 is used for selection of boost frequency.

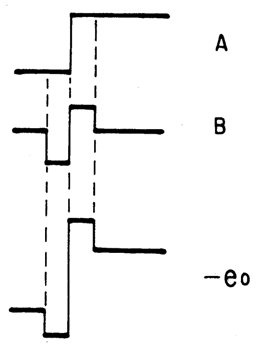


Figure 5

Y Delay, Y Buffer Amplifier

Y/C delay time can be matched by delay line DL2 and Y signal is amplified and fed to the next stage.

3-2-2. Color Gain Control Circuit

In this section (R-Y) signal processing is described as below, but (B-Y) signal is processed by the same way as (R-Y) signal.

R-Y Amplifier and Clamping

The R-Y color difference signal from the decoder board is amplified at the amplifier composed of transistors Q21 and Q22 and clamped at the Horizontal Sync by transistors Q23 and IC3.

R-Y Gain Control Amplifier

This is a variable gain control amplifier composed of variable resistor element of IC4 and transistors Q25-Q27. Gain of this amplifier can be controlled by the color gain control voltage at the pin ⑫ of IC4.

AGC Pulse Generator

Generates the reference pulse for AGC (Automatic Gain Control) of color gain control circuit.

Gain Control Amplifier for AGC Pulse

Circuit is the same as R-Y GAIN CONTROL AMPLIFIER. Gain of this amplifier is controlled by the voltage at pin ⑧ of IC4.

Color Gain Control

AGC pulse, which is output signal of Gain control amplifier for AGC pulse, is clamped by IC6 (2/3) and is made sampling by IC6 (3/3). Amplitude of AGC pulse and DC voltage supplied from CHROMA control on the front panel are compared and matched by IC7 (1/2) with controlling the above gain control amplifier. This control voltage is supplied to the control terminals of R-Y and B-Y gain control amplifiers and controls color gain.

3-2-3. G-Y MATRIX amplifier

G-Y signal is obtained by matrixing R-Y signal and B-Y signal with the amplifier composed of transistors Q44 and Q45.

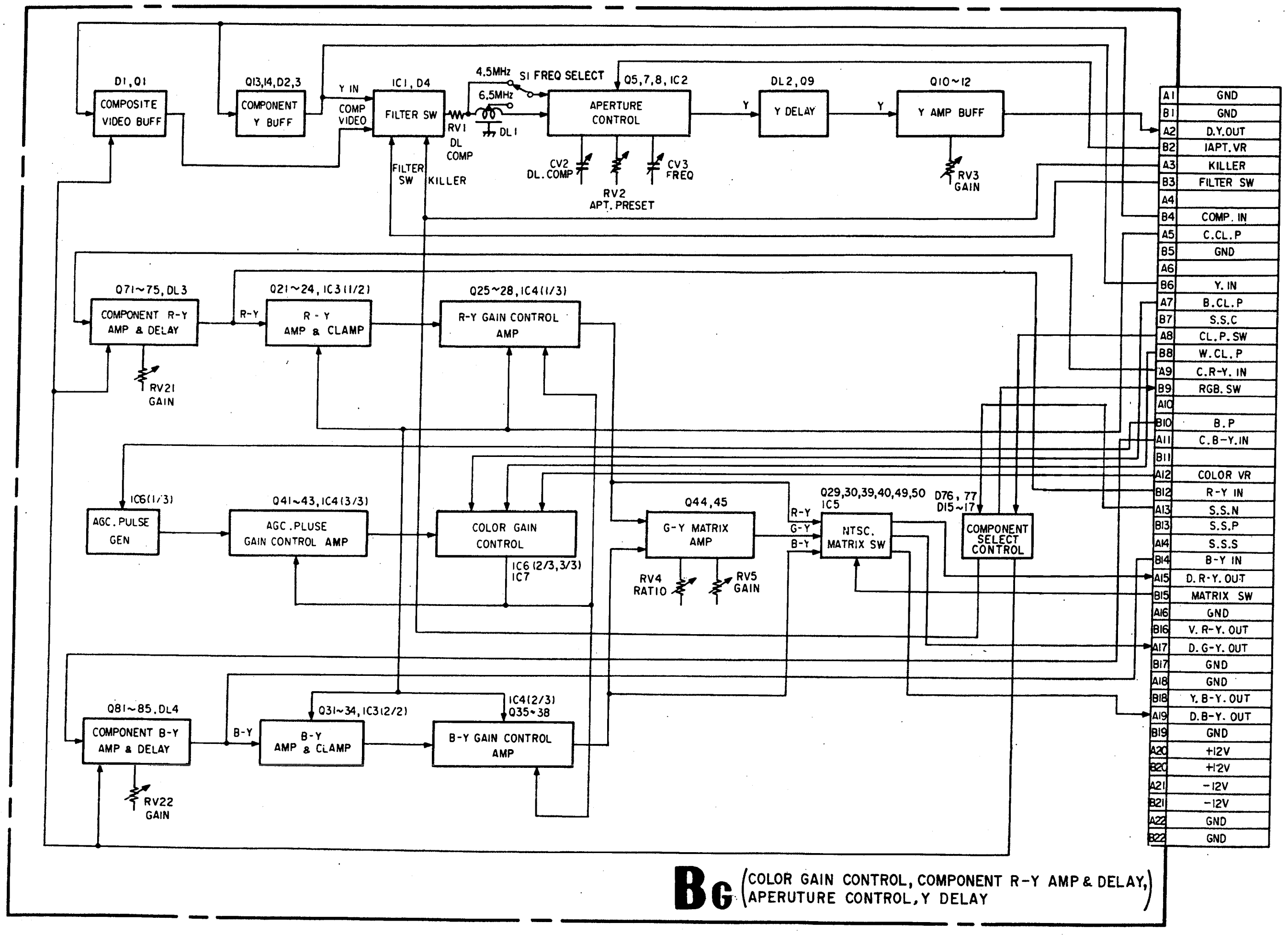
3-2-4. NTSC MATRIX SW

NTSC MATRIX mode operation is obtained by the matrix circuit composed of resistor networks CP14-CP19, transistor Q29, Q30, Q39, Q40, Q49, Q50 and IC5. CP14-CP19 perform matrixing and IC5 works as a switch.

3-2-5. COMPONENT R-Y Amplifier and Delay Circuit

R-Y signal of COMPONENT signal is compensated with amplitude, porality and delay time to match the R-Y signal of decoder output.

BLOCK DIAGRAM OF BG BOARD



D1,Q1
COMPOSITE VIDEO BUFF
Q13,14,D2,3
COMPONENT Y BUFF
Y IN
COMP VIDEO
IC1, D4
FILTER SW
RV1 DL COMP
FILTER SW
KILLER
4.5MHz
6.5MHz
S1 FREQ SELECT
DL1
Q5,7,8, IC2
APERTURE CONTROL
CV2 DL.COMP
RV2 APT. PRESET
CV3 FREQ
DL2,Q9
Y
Y DELAY
Y
Q10~12
Y AMP BUFF
RV3 GAIN
Q71~75, DL3
COMPONENT R-Y AMP & DELAY
RV21 GAIN
R-Y
Q21~24, IC3(1/2)
R - Y AMP & CLAMP
Q25~28, IC4(1/3)
R-Y GAIN CONTROL AMP
IC6(1/3)
AGC. PULSE GEN
Q41~43, IC4(3/3)
AGC. PLUSE GAIN CONTROL AMP
COLOR GAIN CONTROL
IC6 (2/3,3/3) IC7
Q44,45
G-Y MATRIX AMP
RV4 RATIO
RV5 GAIN
R-Y
G-Y
B-Y
Q29,30,39,40,49,50 IC5
NTSC. MATRIX SW
D76, 77 D15~17
COMPONENT SELECT CONTROL
Q81~85, DL4
COMPONENT B-Y AMP & DELAY
RV22 GAIN
B-Y
Q31~34, IC3(2/2)
B-Y AMP & CLAMP
IC4(2/3) Q35~38
B-Y GAIN CONTROL AMP
A1 GND
B1 GND
A2 D.Y.OUT
B2 IAPT.VR
A3 KILLER
B3 FILTER SW
A4
B4 COMP. IN
A5 C.CL.P
B5 GND
A6
B6 Y. IN
A7 B.CL.P
B7 S.S.C
A8 CL.P.SW
B8 W.CL.P
A9 C.R-Y. IN
B9 RGB. SW
A10
B10 B.P
A11 C.B-Y.IN
B11
A12 COLOR VR
B12 R-Y IN
A13 S.S.N
B13 S.S.P
A14 S.S.S
B14 B-Y IN
A15 D.R-Y.OUT
B15 MATRIX SW
A16 GND
B16 V. R-Y. OUT
A17 D. G-Y. OUT
B17 GND
A18 GND
B18 Y. B-Y. OUT
A19 D.B-Y. OUT
B19 GND
A20 +12V
B20 +12V
A21 −12V
B21 −12V
A22 GND
B22 GND
BG (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERUTURE CONTROL, Y DELAY)

3-3. BH BOARD

3-3-1. Switching Circuit Between Y (Luminance) Signal, Color Difference Signal and RGB Signal, AGC Pulse Insertion, Y-C Matrix

Switching Circuit of Y Signal, Crosshatch Signal and SET UP Signal, Buffer

Y signal, crosshatch signal and SET UP signal are selected by the switcher (IC1 (1/3) (2/3)) and selected signal is output via buffer Q1.

Switching Circuit of R-Y Signal, Red Signal and SET UP Signal (Same as B-Y, G-Y Signal)

R-Y signal, Red signal, SET UP signal are selected by IC2 (1/3, 2/3) and selected signal is output via buffer Q4.

Y Signal Screening (Same as R-Y, B-Y, and G-Y Signals)

The signal is performed SAMPLE and HOLD (S/H) at the back porch of signal by transistor Q2 and IC5 (2/2). Y screening is performed by replacing S/H output signal, by the original signal.

For color difference signals screening is made at the Horizontal Sync portion.

Red Matrix, Blue Only SW, Buffer (Same as Green and Blue)

Red is obtained by Y-C matrix circuit composed of resistor network CP9 from color difference signals.

AGC pulse from pulse generator is inserted into Red signal for contrast control.

IC7 activates by the Blue only SW on the front panel. Blue only SW is used for the display of blue signal as a monochrome picture.

3-3-2. Contrast Control, Brightness Control, Peak Limitter

Red Contrast, and Brightness Control Amplifier (Same as Green and Blue)

This is a variable gain control amplifier composed of variable resistor element IC101 and transistor Q102 and Q103. By controlling the voltage at pin ④ of IC101, contrast control is performed, and brightness control is done by controlling the bias voltage of transistor Q102.

Red limitter (Same as Green and Blue)

When excess input signal comes in , amplitude is limitted by the limitter composed of transistors Q104 and Q105.

Red Contrast Control

AGC pulse inserted in Red signal is clamped by transistor Q107 and sampled by transistor Q108.

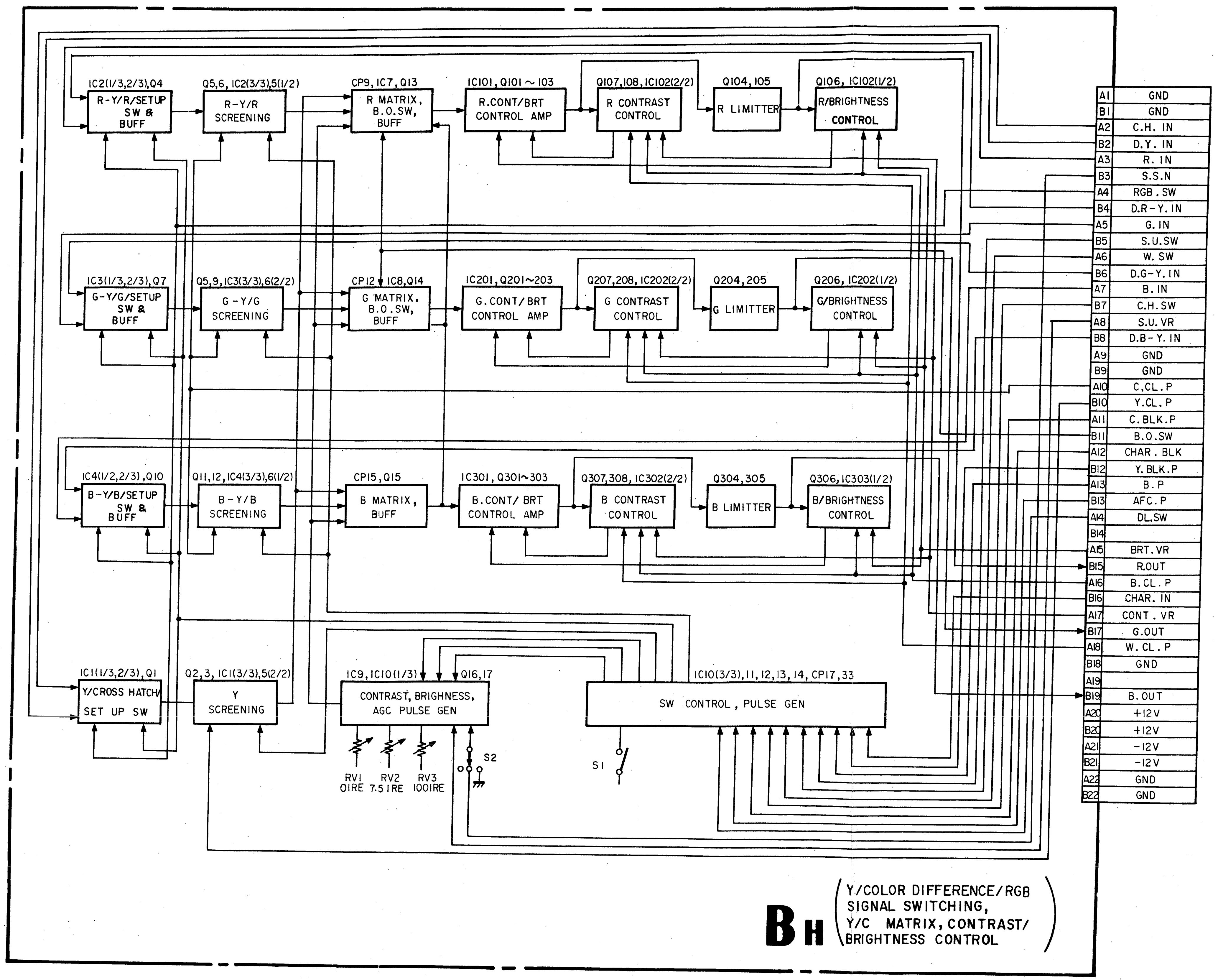
Amplitude of above AGC pulse is compared with the reference voltage applied from CONTRAST control on the front panel in IC102 (2/2).

Contrast control is performed by controlling the gain of Red contrast brightness control amplifier so that these voltages may match.

Red Brightness Control (Same as Green and Blue)

The black level of Red signal is performed SAMPLE and HOLD (S/H) by transistor Q106. This S/H voltage is compared with the reference voltage applied from Brightness control on the front panel in IC102 (1/2). Brightness control is performed by controlling the bias of Red contrast Brightness control amplifier so that these voltages may match.

BLOCK DIAGRAM OF BH BOARD


IC2(1/3,2/3),Q4
R-Y/R/SETUP SW & BUFF
Q5,6, IC2(3/3),5(1/2)
R-Y/R SCREENING
CP9, IC7, Q13
R MATRIX, B.O.SW, BUFF
IC101, Q101 ~ 103
R.CONT/BRT CONTROL AMP
Q107,108, IC102(2/2)
R CONTRAST CONTROL
Q104, 105
R LIMITTER
Q106, IC102(1/2)
R/BRIGHTNESS CONTROL
IC3(1/3,2/3),Q7
G-Y/G/SETUP SW & BUFF
Q5,9, IC3(3/3),6(2/2)
G-Y/G SCREENING
CP12 IC8,Q14
G MATRIX, B.O.SW, BUFF
IC201, Q201~203
G.CONT/BRT CONTROL AMP
Q207,208, IC202(2/2)
G CONTRAST CONTROL
Q204,205
G LIMITTER
Q206, IC202(1/2)
G/BRIGHTNESS CONTROL
IC4(1/2,2/3),Q10
B-Y/B/SETUP SW & BUFF
Q11,12, IC4(3/3),6(1/2)
B-Y/B SCREENING
CP15, Q15
B MATRIX, BUFF
IC301, Q301~303
B.CONT/ BRT CONTROL AMP
Q307,308, IC302(2/2)
B CONTRAST CONTROL
Q304,305
B LIMITTER
Q306, IC303(1/2)
B/BRIGHTNESS CONTROL
IC1(1/3,2/3), Q1
Y/CROSS HATCH/ SET UP SW
Q2,3, IC1(3/3),5(2/2)
Y SCREENING
IC9, IC10(1/3)
Q16,17
CONTRAST, BRIGHNESS, AGC PULSE GEN
RV1 0IRE
RV2 7.5IRE
RV3 100IRE
S2
IC10(3/3),11, 12, 13, 14, CP17,33
SW CONTROL , PULSE GEN
S1
A1 GND
B1 GND
A2 C.H. IN
B2 D.Y. IN
A3 R. IN
B3 S.S.N
A4 RGB . SW
B4 D.R-Y. IN
A5 G. IN
B5 S.U.SW
A6 W. SW
B6 D.G-Y. IN
A7 B. IN
B7 C.H.SW
A8 S.U. VR
B8 D.B-Y. IN
A9 GND
B9 GND
A10 C.CL.P
B10 Y.CL.P
A11 C.BLK.P
B11 B.O.SW
A12 CHAR . BLK
B12 Y. BLK.P
A13 B.P
B13 AFC.P
A14 DL.SW
B14
A15 BRT.VR
B15 R.OUT
A16 B.CL.P
B16 CHAR. IN
A17 CONT . VR
B17 G.OUT
A18 W.CL.P
B18 GND
A19
B19 B.OUT
A20 +12V
B20 +12V
A21 -12V
B21 -12V
A22 GND
B22 GND
BH
(Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y/C MATRIX, CONTRAST/ BRIGHTNESS CONTROL)

3-4. BI BOARD

3-4-1. Red Screen SW,AGC Pulse Insertion (Same as Green and Blue)

Red signal can be cut off by RED SCREEN SW on the front panel. Horizontal rate AGC pulse is removed and the reference pulse is inserted in the signal for the GAIN and BIAS adjustment of video output amplifier and for the beam control circuit.

3-4-2. Red Limitter, Gain Bias Control Amplifier

This limitter is used for limiting the excess input level of the signal below 0V DC.
The GAIN/BIAS CONTROL amplifier is composed of variable resistor element and transistors as same as contrast control amplifier' (See section of BH board)

3-4-3. Red Feedback Amplifier, Red Gain Control Red Bias Control Circuit

RED FEEDBACK amplifier inverts the phase of the signal derived from VIDEO OUTPUT amplifier via NF BUFF (Negative Feedback Buffer) in BK board.
The BIAS of VIDEO OUTPUT AMPLIFIER is controlled by RED BIAS CONTROL circuit so that the black level of inverted signal may be 0V DC.
(This time, black level of VIDEO OUTPUT will be −90V DC.)
RED GAIN CONTROL circuit controls the gain of VIDEO OUTPUT AMPLIFIER so that the level of the reference pulse may match to the voltage at pin ③ of IC103.
(When GAIN control (RED) in the drawer is turned, the level of the reference pulse inserted in section 1 changes. And amplitude (Gain) of Red signal changes so that the amplitude of the reference pulse derived from RED FEEDBACK amplifier may be maintained constant by GAIN CONTROL circuit.)

3-4-4. Red Cathode Current Detection, Red Beam Current Control Circuit (I-V Conversion)

Refer to the BK board section of beam control circuit

3-4-5. ABL Detector, Drive Control, Over Drive

The reference level of GAIN CONTROL circuit is controlled by ABL detector and DRIVE CONTROL so that the cathode current of CRT exceeds the predetermined (Preset) value to prevent damage of CRT. OVER DRIVE circuit lights up the OVER LOAD LED on the front panel for warning.

3-4-6. G2 Control Circuit

Circuit diagram of G2 control circuit is shown in Figure 6.
The signal for BM. CURRENT control is fed to base of the transistor Q11 from RED BM. CURRENT control circuit. (Same as G and B)
sistors Q11-Q13 is turned on and is compared with the reference voltage of base voltage Q14.
And this circuit drives transistor Q3, Q2 located in C board so that Transistor Q3, Q2 in C board drives G2 voltage for adjusting cut off level of CRT.
Base voltage of transistor Q14 (reference voltage) is set so that the voltage of Black level at CATHORD electrode may be +120V DC and maintain Ekco (cut off voltage) +120V constant.

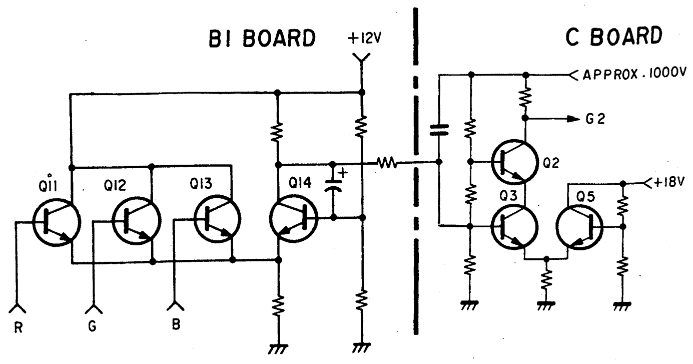
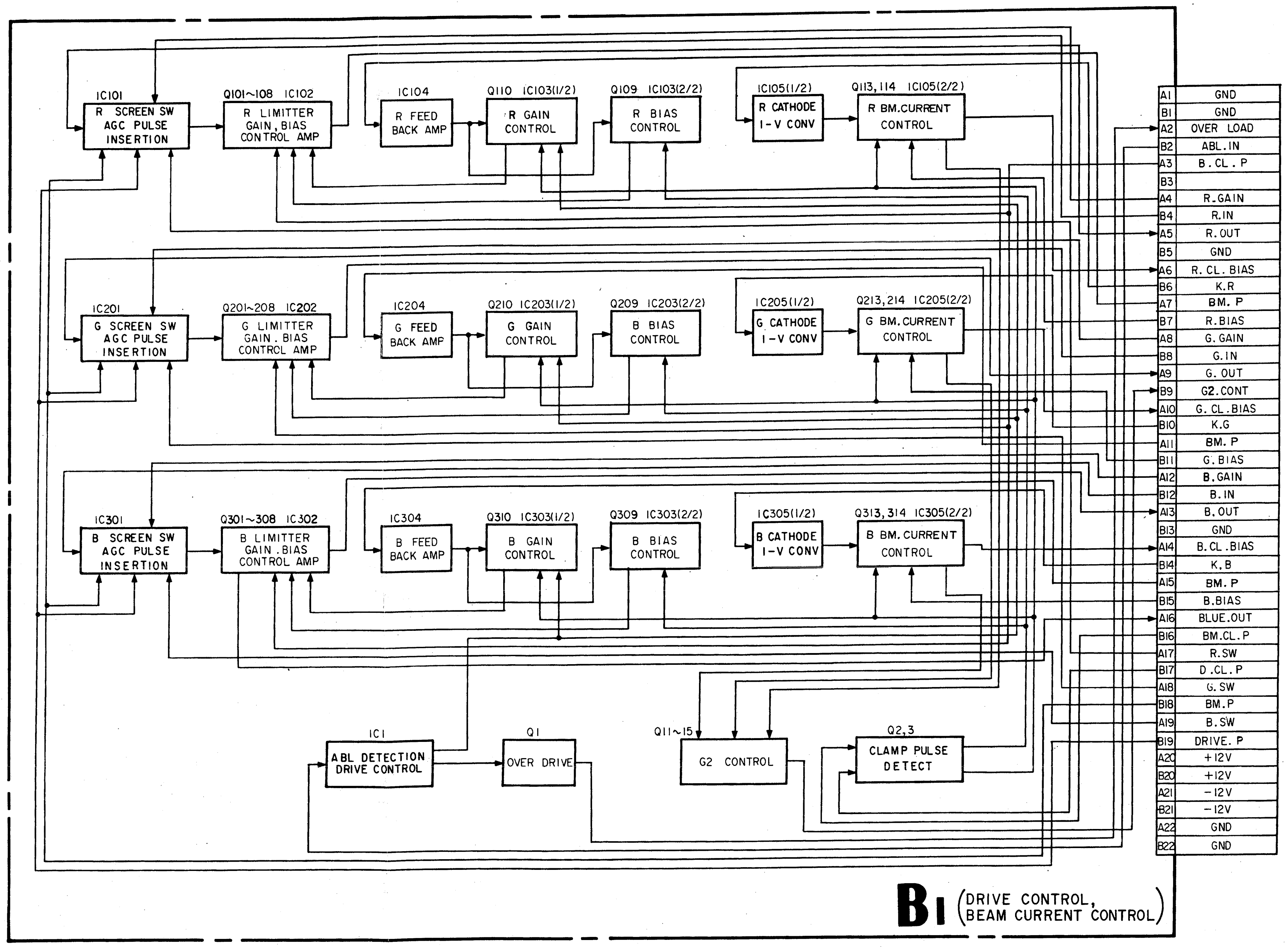

BI BOARD
+12V
C BOARD
APPROX. 1000V
G2
+18V
Q11
Q12
Q13
Q14
Q2
Q3
Q5
R
G
B

Figure 6

BLOCK DIAGRAM OF BI BOARD


IC101
R SCREEN SW AGC PULSE INSERTION
Q101~108 IC102
R LIMITTER GAIN, BIAS CONTROL AMP
IC104
R FEED BACK AMP
Q110 IC103(1/2)
R GAIN CONTROL
Q109 IC103(2/2)
R BIAS CONTROL
IC105(1/2)
R CATHODE I-V CONV
Q113, 114 IC105(2/2)
R BM.CURRENT CONTROL
IC201
G SCREEN SW AGC PULSE INSERTION
Q201~208 IC202
G LIMITTER GAIN. BIAS CONTROL AMP
IC204
G FEED BACK AMP
Q210 IC203(1/2)
G GAIN CONTROL
Q209 IC203(2/2)
B BIAS CONTROL
IC205(1/2)
G CATHODE I-V CONV
Q213, 214 IC205(2/2)
G BM. CURRENT CONTROL
IC301
B SCREEN SW AGC PULSE INSERTION
Q301~308 IC302
B LIMITTER GAIN. BIAS CONTROL AMP
IC304
B FEED BACK AMP
Q310 IC303(1/2)
B GAIN CONTROL
Q309 IC303(2/2)
B BIAS CONTROL
IC305(1/2)
B CATHODE I-V CONV
Q313, 314 IC305(2/2)
B BM. CURRENT CONTROL
IC1
ABL DETECTION DRIVE CONTROL
Q1
OVER DRIVE
Q11~15
G2 CONTROL
Q2, 3
CLAMP PULSE DETECT
A1 GND
B1 GND
A2 OVER LOAD
B2 ABL.IN
A3 B.CL.P
B3
A4 R.GAIN
B4 R.IN
A5 R.OUT
B5 GND
A6 R.CL.BIAS
B6 K.R
A7 BM.P
B7 R.BIAS
A8 G.GAIN
B8 G.IN
A9 G.OUT
B9 G2.CONT
A10 G.CL.BIAS
B10 K.G
A11 BM.P
B11 G.BIAS
A12 B.GAIN
B12 B.IN
A13 B.OUT
B13 GND
A14 B.CL.BIAS
B14 K.B
A15 BM.P
B15 B.BIAS
A16 BLUE.OUT
B16 BM.CL.P
A17 R.SW
B17 D.CL.P
A18 G.SW
B18 BM.P
A19 B.SW
B19 DRIVE.P
A20 +12V
B20 +12V
A21 −12V
B21 −12V
A22 GND
B22 GND
BI (DRIVE CONTROL, BEAM CURRENT CONTROL)

3-5. SYNC PROCESSOR, PULSE GENERATOR (BJ BOARD)

3-5-1. 1H Pulse Processing

The composite sync is separated from incoming signal at BA board. And 1H sync is made by separating V sync and equalizing pulse from composite sync.
Also H sync which has constant pulse width is made from 1H sync.

3-5-2. 2fH Multivibrator

This circuit generates 2fH rate pulse from H rate flyback pulse.

3-5-3. Vertical Counter

The 2fH rate pulse is counted down to generate Vertical rate trigger pulse for vertical deflection circuit.
When there is no incoming signal, trigger pulse is generated by vertical counter (384H).
When there is incoming signal with V sync, this counter circuit is reset by V sync and generates trigger pulse synchronized with V sync.
Also in order to increase stability of vertical scanning, noise gating process is made during V sync period.

3-5-4. V Sync and Delay

V sync and V BLANKING pulses are generated by output trigger pulse from vertical counter.
And when V DELAY SW on the front panel is selcted ON, these pulses are generated in a V/2 delayed position relative to the V sync position of incoming signal.

3-5-5. Crosshatch Generator

Internal crosshatch signal is made as follows.
The vertical lines are generated by approx. 18fH rate pulses synchronized with flyback pulse.
And flyback pulse is counted down to generate horizontal lines.

3-5-6. Burst Gate Pulse, Y-CLAMP Pulse, C-CLAMP Pulse Generator

The Burst Gate Pulse (B.G.P.), clamp pulse for luminance signal (Y.CL.P) and clamp pulse for color difference signal (C.CL.P) are generated from 1H sync via LCR network and transistors.

3-5-7. Picture Set Up Pulse Generator

This is the gate pulse generator for picture set-up function, and consists of mono multipliers.

3-5-8. Split, Y Blanking, C Blanking Pulse Generator

Y BLANKING pulse (Y BLK P) and C BLANKING pulse (C BLK P) are generated. These pulses are used for the purpose of DC restoration of color difference signal, Y signal and RGB signal. DC restoration is made by inserting the black reference signal during blanking period in the signal. Also C.BLK. pulse is mixed with vertical rate blanking signals for SPLIT display and for B/W display.

3-5-9. Horizontal Rate AGC and Clamp Pulse Generator

COLOR GAIN control, CONTRAST control and BRIGHTNESS control are stabilized by insertion of reference signal and using feedback circuit. Horizontal rate BLACK pulse (B.P), BLACK CLAMP pulse (B.CL.P) and WHITE CLAMP pulse (W. CL.P) are generated here.

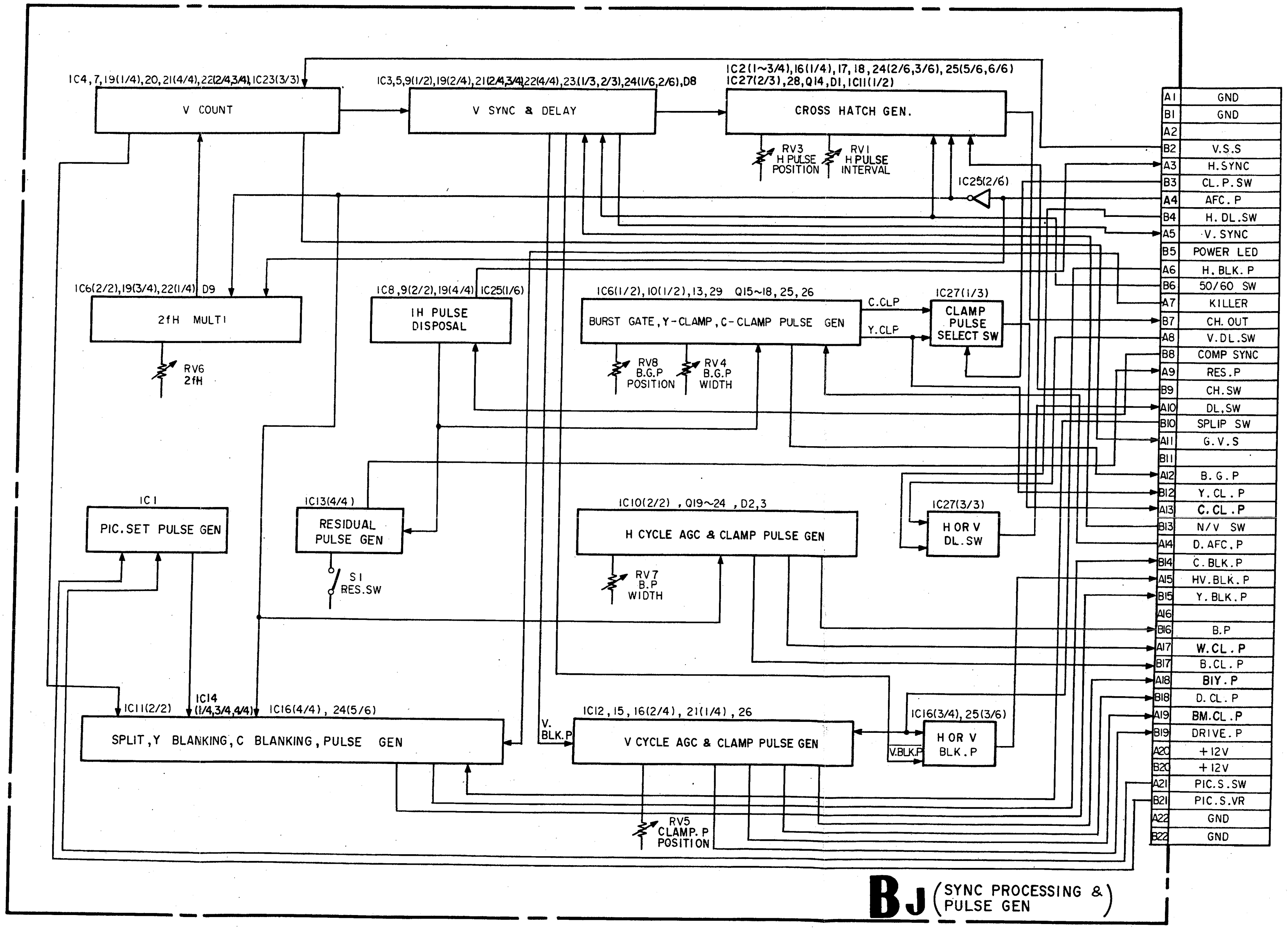
3-5-10. Vertical Rate AGC and Clamp Pulse Generator

In this model, BEAM CONTROL circuit is used for high stability in white balance.
The reference signal is inserted in the signal for gain control circuit in video output amplifier and for beam control circuit. Vertical rate pulses are used for this purpose.
Vertical rate BEAM PULSE (BM.P) DRIVE PULSE (DRIVE.P) and BEAM CLAMP PULSE (BM.CL.P) are generated here.

3-5-11. Others

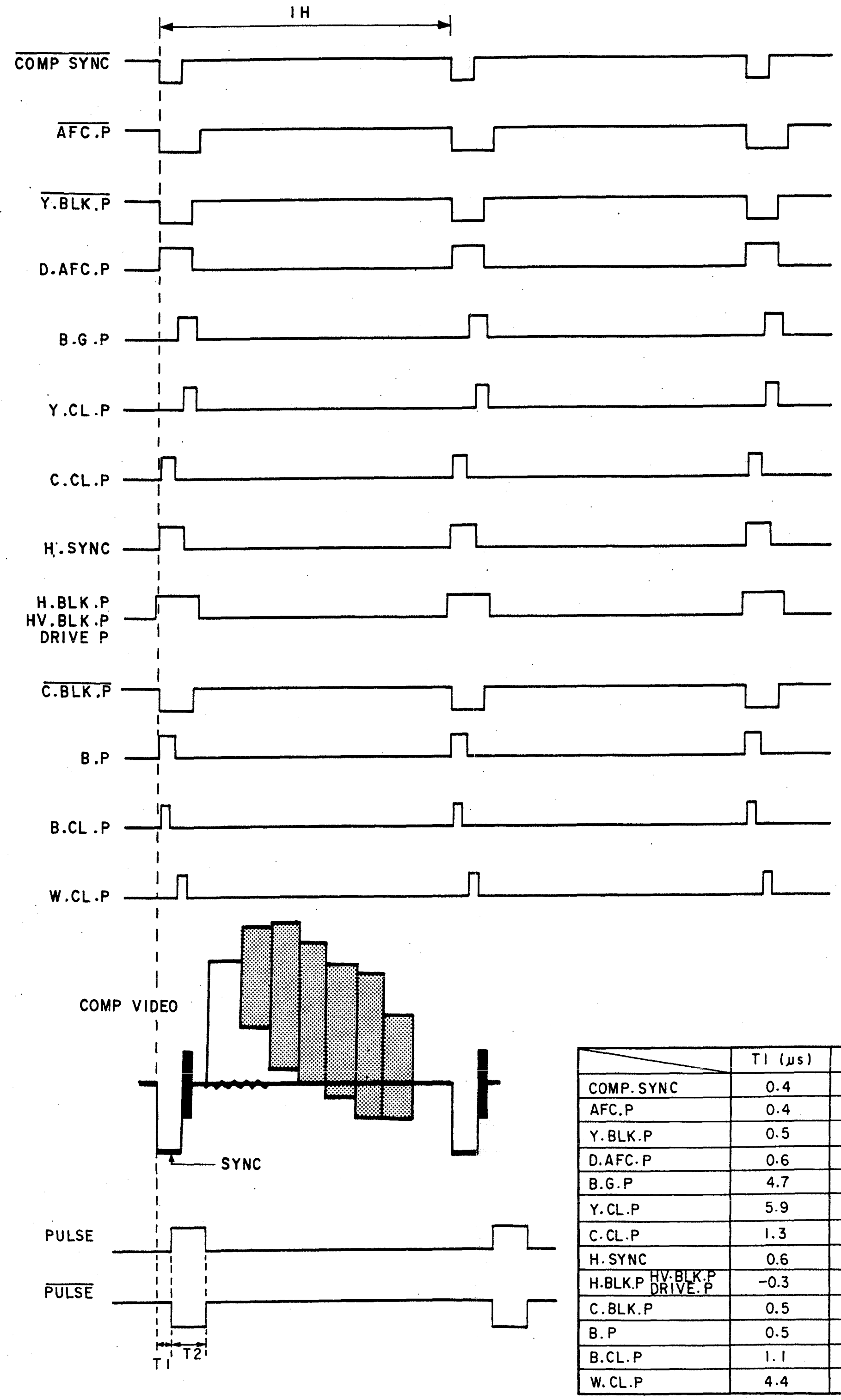
Black reference is determined at the position of clamping in black reference insertion circuit for both color difference signal and RGB signal. Accordingly C.CL.P is used as clamp pulse for color difference signal processing and Y.CL.P is for RGB signal. CLAMP PULSE SELECTION SW switches C.CL.P. or Y CL.P to the clamp pulse for the insertion of black reference.

BLOCK DIAGRAM OF BJ BOARD


IC4, 7, 19(1/4), 20, 21(4/4), 22(2/4,3/4), IC23(3/3)
V COUNT
IC3,5,9(1/2),19(2/4),21(2/4,3/4),22(4/4),23(1/3,2/3),24(1/6,2/6),D8
V SYNC & DELAY
IC2(1~3/4),16(1/4),17,18,24(2/6,3/6),25(5/6,6/6)
IC27(2/3),28,Q14,D1,IC11(1/2)
CROSS HATCH GEN.
RV3
H PULSE POSITION
RV1
H PULSE INTERVAL
IC25(2/6)
IC6(2/2),19(3/4),22(1/4) D9
2fH MULTI
RV6
2fH
IC8,9(2/2),19(4/4) IC25(1/6)
1H PULSE DISPOSAL
IC6(1/2),10(1/2),13,29 Q15~18,25,26
BURST GATE, Y-CLAMP, C-CLAMP PULSE GEN
C.CLP
Y.CLP
IC27(1/3)
CLAMP PULSE SELECT SW
RV8
B.G.P POSITION
RV4
B.G.P WIDTH
IC1
PIC.SET PULSE GEN
IC13(4/4)
RESIDUAL PULSE GEN
S1
RES.SW
IC10(2/2), Q19~24, D2,3
H CYCLE AGC & CLAMP PULSE GEN
RV7
B.P WIDTH
IC27(3/3)
H OR V DL.SW
IC11(2/2)
IC14 (1/4,3/4,4/4)
IC16(4/4), 24(5/6)
SPLIT, Y BLANKING, C BLANKING, PULSE GEN
V. BLK.P
IC12, 15, 16(2/4), 21(1/4), 26
V CYCLE AGC & CLAMP PULSE GEN
IC16(3/4), 25(3/6)
V.BLK.P
H OR V BLK.P
RV5
CLAMP. P POSITION
BJ (SYNC PROCESSING & PULSE GEN)

A1	GND
B1	GND
A2	
B2	V.S.S
A3	H.SYNC
B3	CL.P.SW
A4	AFC.P
B4	H.DL.SW
A5	V.SYNC
B5	POWER LED
A6	H.BLK.P
B6	50/60 SW
A7	KILLER
B7	CH. OUT
A8	V.DL.SW
B8	COMP SYNC
A9	RES.P
B9	CH.SW
A10	DL.SW
B10	SPLIP SW
A11	G.V.S
B11	
A12	B.G.P
B12	Y.CL.P
A13	C.CL.P
B13	N/V SW
A14	D.AFC.P
B14	C.BLK.P
A15	HV.BLK.P
B15	Y.BLK.P
A16	
B16	B.P
A17	W.CL.P
B17	B.CL.P
A18	BIY.P
B18	D.CL.P
A19	BM.CL.P
B19	DRIVE.P
A20	+12V
B20	+12V
A21	PIC.S.SW
B21	PIC.S.VR
A22	GND
B22	GND

TIMING CHART OF MAJOR PULSE (BJ BOARD)


1H
COMP SYNC
AFC.P
Y.BLK.P
D.AFC.P
B.G.P
Y.CL.P
C.CL.P
H.SYNC
H.BLK.P
HV.BLK.P
DRIVE P
C.BLK.P
B.P
B.CL.P
W.CL.P
COMP VIDEO
SYNC
PULSE
PULSE
T1
T2

	T1 (μs)	T2 (μs)
COMP.SYNC	0.4	4.8
AFC.P	0.4	9.0
Y.BLK.P	0.5	7.2
D.AFC.P	0.6	7.2
B.G.P	4.7	4.1
Y.CL.P	5.9	2.6
C.CL.P	1.3	3.0
H.SYNC	0.6	5.5
H.BLK.P HV.BLK.P DRIVE.P	−0.3	9.0
C.BLK.P	0.5	7.2
B.P	0.5	3.5
B.CL.P	1.1	1.8
W.CL.P	4.4	1.8

Figure 7

FIELD 1 VERTICAL BLANKING

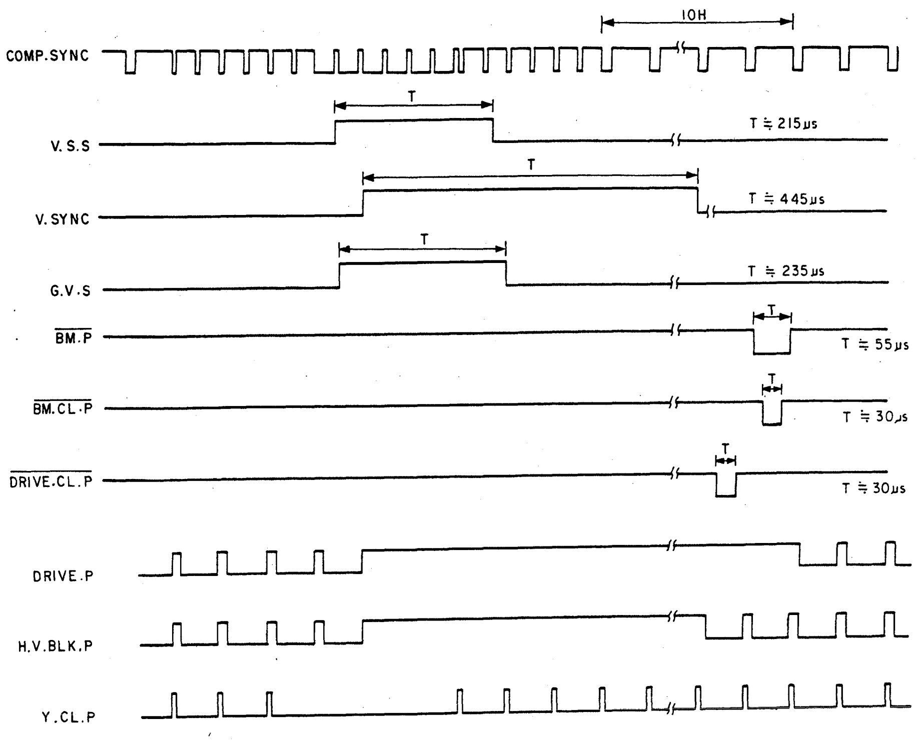

10H
COMP.SYNC
T
V.S.S
T ≒ 215μs
T
V.SYNC
T ≒ 445μs
T
G.V.S
T ≒ 235μs
T
BM.P
T ≒ 55μs
T
BM.CL.P
T ≒ 30μs
T
DRIVE.CL.P
T ≒ 30μs
DRIVE.P
H.V.BLK.P
Y.CL.P

Figure 8

FIELD 2 VERTICAL BLANKING

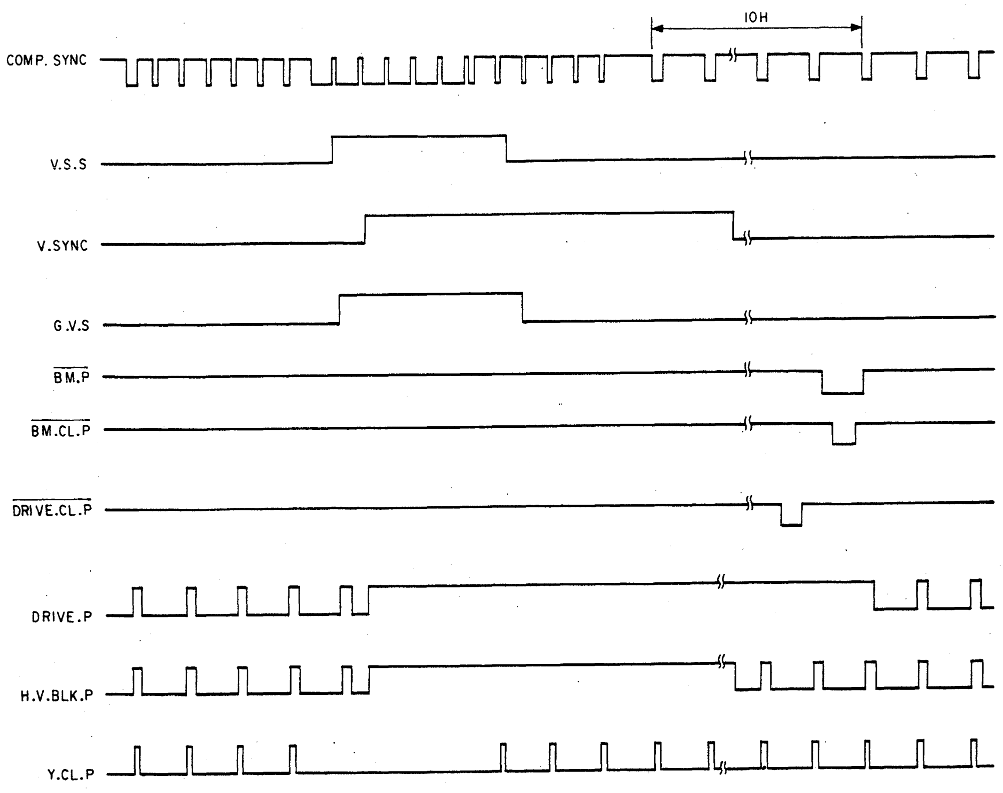

10H
COMP. SYNC
V.S.S
V.SYNC
G.V.S
BM.P
BM.CL.P
DRIVE.CL.P
DRIVE.P
H.V.BLK.P
Y.CL.P

Figure 9

3-6. BK BOARD

Following are described about Red channal. Green and Blue channel are the SAME.

3-6-1. Red Drive Amplifier, Red Buffer

This circuit drives final stage of video output amplifier. Gain is approx. 2

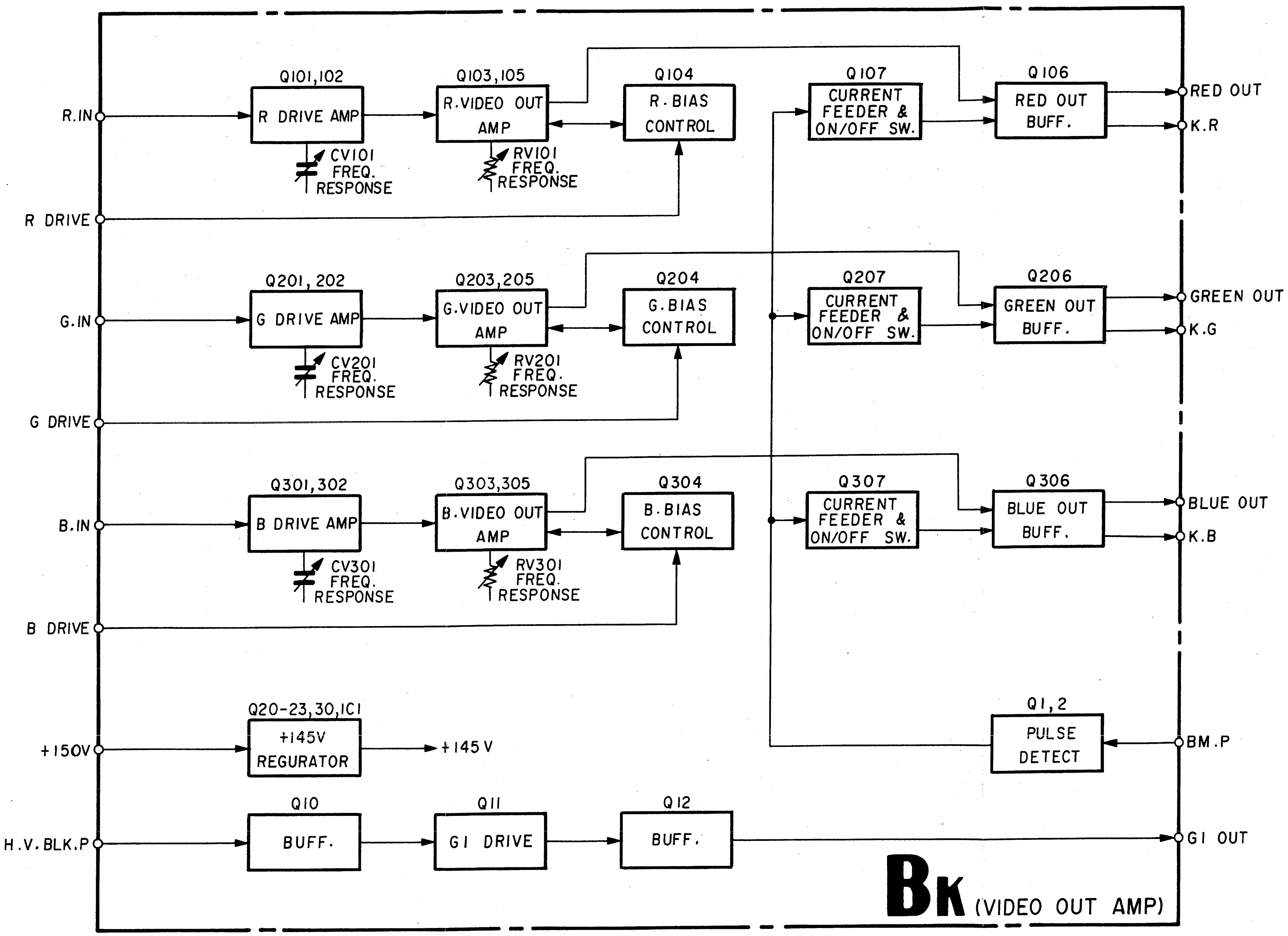
3-6-2. Red Video Output Amplifier and Buffer

This is the final stage amplifier to obtain amplitude enough to drive cathode of CRT.
Gain is approx. 11
The amplified signal is input to the RED cathode of CRT through the next stage's buffer. At this final stage's bufffer, the current source (Q107) is applied.
A BM.P signal of positive polarity is input to the base of Q107. For this BM.P period, Q107 is cut off, and the current is consequently not supplied to the buffer. So, the only current supplied from cathode is flown from emitter to collector of Q106 in this period.
This board outputs the Q106 collector current as K.R.

3-6-3. H.V. Blanking Circuit

H.V.BLK. pulse is amplified by G1 drive circuit and it is fed to the G1 of CRT through the buffer.

BLOCK DIAGRAM OF BK BOARD


R.IN
R DRIVE
G.IN
G DRIVE
B.IN
B DRIVE
+150V
H.V.BLK.P
Q101,102
R DRIVE AMP
CV101 FREQ. RESPONSE
Q103,105
R.VIDEO OUT AMP
RV101 FREQ. RESPONSE
Q104
R.BIAS CONTROL
Q107
CURRENT FEEDER & ON/OFF SW.
Q106
RED OUT BUFF.
RED OUT
K.R
Q201, 202
G DRIVE AMP
CV201 FREQ. RESPONSE
Q203,205
G.VIDEO OUT AMP
RV201 FREQ. RESPONSE
Q204
G.BIAS CONTROL
Q207
CURRENT FEEDER & ON/OFF SW.
Q206
GREEN OUT BUFF.
GREEN OUT
K.G
Q301,302
B DRIVE AMP
CV301 FREQ. RESPONSE
Q303,305
B.VIDEO OUT AMP
RV301 FREQ. RESPONSE
Q304
B.BIAS CONTROL
Q307
CURRENT FEEDER & ON/OFF SW.
Q306
BLUE OUT BUFF.
BLUE OUT
K.B
Q20-23,30,IC1
+145V REGURATOR
+145 V
Q1,2
PULSE DETECT
BM.P
Q10
BUFF.
Q11
G1 DRIVE
Q12
BUFF.
G1 OUT
BK (VIDEO OUT AMP)

3-7. Beam control Circuit (BI, BK BOARD) (Same as Green and Blue)

Block diagram is shown in Figure 10.

3-7-1. Detection of Cathode Current and I-V Conversion (BI BOARD)

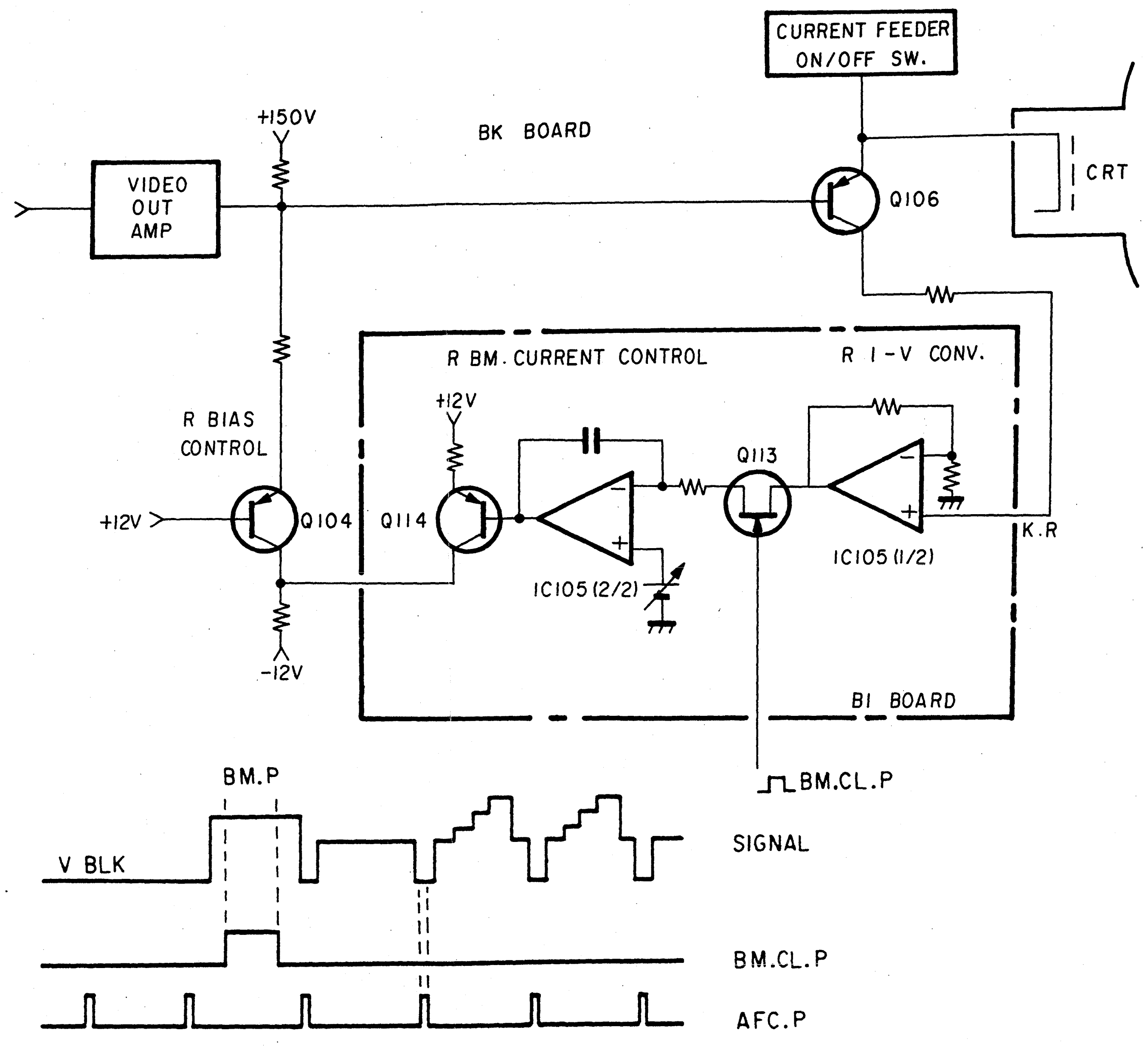
Cathode current is detected as a voltage by using IC105 (1/2)

3-7-2. Red BM. CURRENT Control (BI BOARD)

BMP is inserted in the signal during vertical blanking in BI board. This BMP is detected as a cathode current and sampled by BM CLP applied to FET Q113.
This BM. CURRENT control circuit controls the base voltage of transistor Q114 so that converted voltage from cathode current and the reference voltage may match.

3-7-3. Red Bias Control Circuit (BK BOARD)

In the R BIAS control circuit on the BK board, emitter current of Q104 is controlled according to the variation of Q114 base voltage on the BI board.
Therefore, the base voltage of Q106 changes so that the black level of signal that is input to the cathode of CRT is controlled.


CURRENT FEEDER ON/OFF SW.
+150V
BK BOARD
VIDEO OUT AMP
Q106
CRT
R BM. CURRENT CONTROL
R I-V CONV.
+12V
R BIAS CONTROL
Q113
+12V
Q104
Q114
IC105 (2/2)
IC105 (1/2)
K.R
-12V
BI BOARD
BM.CL.P
BM.P
V BLK
SIGNAL
BM.CL.P
AFC.P

(BVM-1315 ONLY)

3-8. NTSC COMB FILTER (BB BOARD)

3-8-1. Outline

Block diagram is shown in Figure.
The chrominance component signal is fed from the composite video signal by the transversal filter.
And is made balanced modulation and fed to 1H delay line 1H delayed chrominance signal is obtained by the demodulator from 1H delay line.
Output signal of the transversal filter and 1H delayed chrominance signal are matrixed to generate pure charominance signal.
Y signal is obtained by matrixing pure chrominance signal and 280 ns delayed composite signal.
So Y/C separation is performed.

3-8-2. Transversal Filter (Band Pass Filter)

The input video signal A is fed to the 280 ns delay line with center tap, and 140 ns delayed signal A1 and 280 ns delayed signal A2 are obtaind (shown in Figure 11.)
Band pass gain is obtained by mixing signals A, A1 and A2 at the ratio of $-\frac{1}{2}, 1, \frac{1}{2}$.

Output signal of this transversal filter activates as a Band pass filter, which center frequency is 3.58MHz.

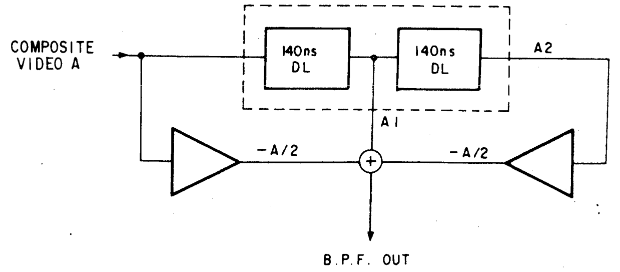
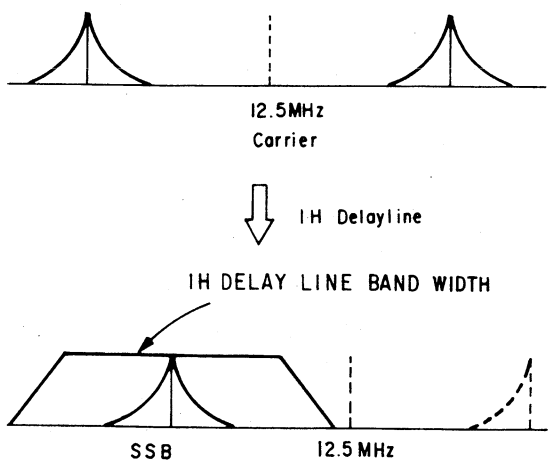

COMPOSITE VIDEO A
140ns DL
140ns DL
A2
A1
-A/2
-A/2
B.P.F. OUT

Figure 11

3-8-3. MOD – DEMOD
[Chroma Phase Control, Modulator, 1HDL, Video Amp, Demodulator]

The output signal of this BPF is fed to BALANCED MODULATOR and modulated at the frequency of 12.5MHz. This modulated signal is fed to 1H delay line. So SSB (Single side band) modulation is performed due to the limitation of band width of 1H delay line.
And then by demodulating this signal, 1H delayed chrominance signal is obtained.


12.5MHz
Carrier
1H Delayline
1H DELAY LINE BAND WIDTH
SSB
12.5MHz

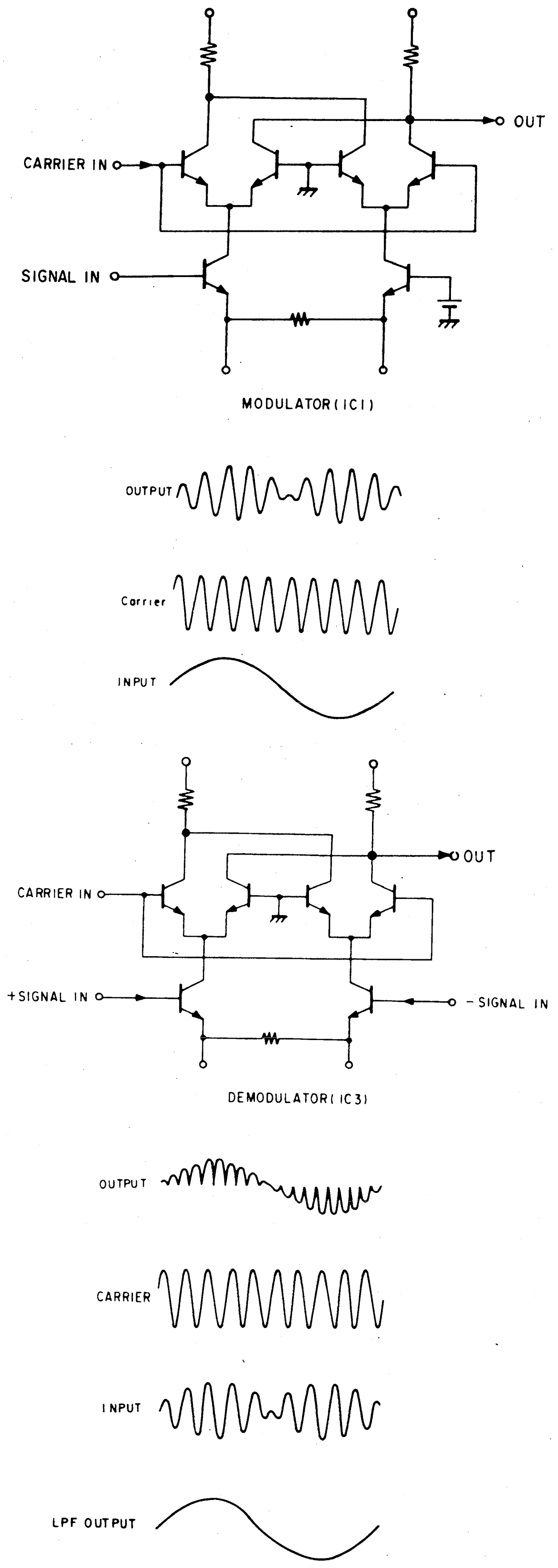

OUT
CARRIER IN
SIGNAL IN
MODULATOR (IC1)
OUTPUT
Carrier
INPUT
OUT
CARRIER IN
+SIGNAL IN
- SIGNAL IN
DEMODULATOR (IC3)
OUTPUT
CARRIER
INPUT
LPF OUTPUT

Figure 12

3-8-4. Pure Chrominance Generation
[Pure Chroma Calculation, LPF]

The BPF output signal and demodulated 1H delayed signal are added by transistor Q10 and Q11 and passes through low pass filter. Pure chrominance signal is obtained.
See Figure 13.

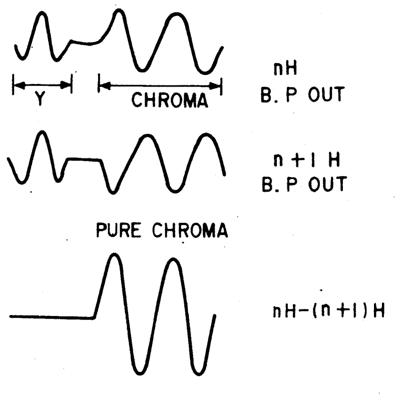

Y
CHROMA
nH
B.P OUT
n+1 H
B.P OUT
PURE CHROMA
nH-(n+1)H

Figure 13

3-8-5. Y Generation [Y CALCULATION, Y-AMP]

The Y output is obtained from the composite video signal which has been delayed 280ns by DL1, by subtracting the pure chroma from it and passing through the AMP.

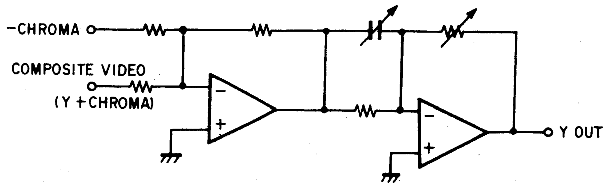

-CHROMA
COMPOSITE VIDEO
(Y+CHROMA)
Y OUT

Figure 14

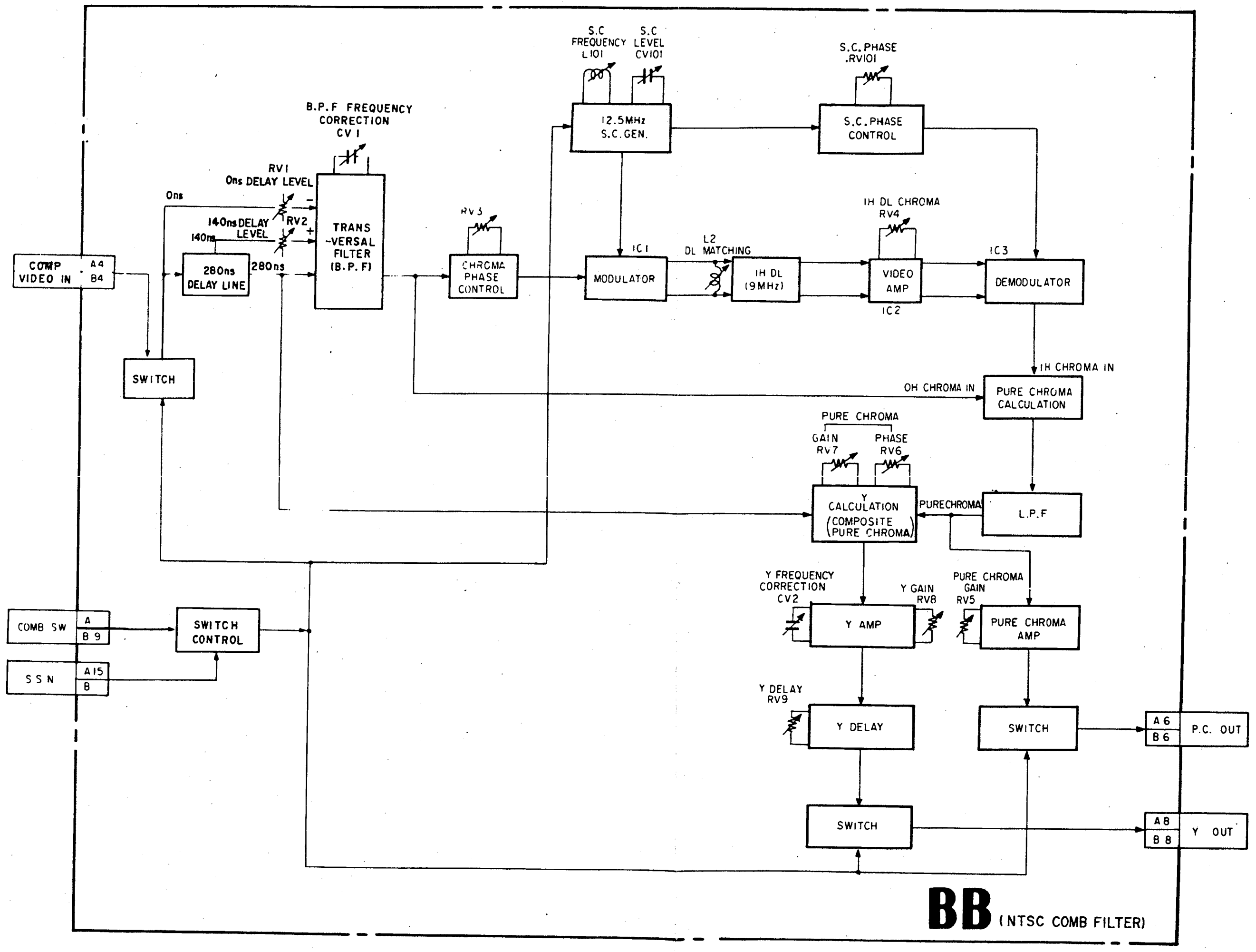
3-8-6. Y-delay

Match the Y when the decoder OUT to the delay time of chroma.

3-8-7. 12.5MHz OSC

A 12.5MHz oscillation circuit is composed by using a crystal oscillator and its output is supplied to the modulator as a carrier. Moreover, the output which is passed through the delay circuit is supplied to the demodulator.

BLOCK DIAGRAM OF BB BOARD


S.C FREQUENCY L101
S.C LEVEL CV101
S.C. PHASE .RV101
B.P.F FREQUENCY CORRECTION CV1
RV1 0ns DELAY LEVEL
0ns
140ns DELAY LEVEL RV2
140ns
280ns
COMP VIDEO IN A4 B4
280ns DELAY LINE
TRANS -VERSAL FILTER (B.P.F)
RV3
CHROMA PHASE CONTROL
12.5MHz S.C.GEN.
S.C. PHASE CONTROL
IC1
MODULATOR
L2 DL MATCHING
1H DL (9MHz)
1H DL CHROMA RV4
VIDEO AMP
IC2
IC3
DEMODULATOR
SWITCH
1H CHROMA IN
0H CHROMA IN
PURE CHROMA CALCULATION
PURE CHROMA
GAIN RV7
PHASE RV6
Y CALCULATION (COMPOSITE PURE CHROMA)
PURECHROMA
L.P.F
Y FREQUENCY CORRECTION CV2
Y GAIN RV8
PURE CHROMA GAIN RV5
COMB SW A B9
SWITCH CONTROL
SSN A15 B
Y AMP
PURE CHROMA AMP
Y DELAY RV9
Y DELAY
SWITCH
A6 B6 P.C. OUT
SWITCH
A8 B8 Y OUT
BB (NTSC COMB FILTER)

(BVM-1315 ONLY)

3-9. NTSC DEMODULATOR, Y TRAP CIRCUIT (BC BOARD)

The composite video signal (NTSC) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 3.58MHz trap circuit with Y signal and to band pass filter with chrominance signal.

3-9-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R18, capacitor C7, C8, inductor L3 and transistor Q5.
The center frequency of this filter is adjusted to the subcarrier frequency (3.58MHz) by L3, and chrominance signal is derived from Q5.
This circuit selects comb filter (BB board) mode or notch filter mode by a push of button on the front panel. When comb filter mode is selected, comb switch circuit composed of transistor Q103 and Q104 activates and base voltage of Q5 goes down to −12V and Q15 is cut off and then chrominance signal (Pure C) is provided from comb filter circuit to IC2.

3-9-2. Residual SW Circuit

The chrominance signal dervied at transistor Q5 is fed to analog switcher IC2.
When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period.
When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate.
When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

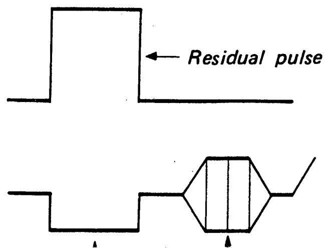

Residual pulse
H Sync
Color Burst

Figure 15

3-9-3. Chroma Amplifier Circuit

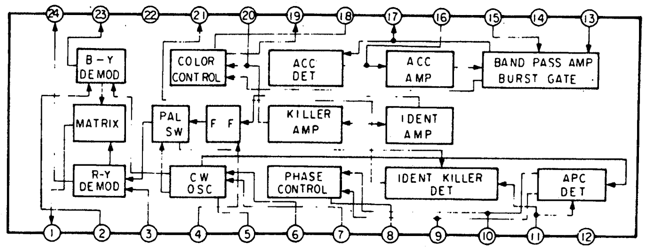
The level of chrominance signal from residual switch circuit (IC2 pin ④) is divided by resistor R85 and R86 and is fed to chroma amplifier circuit (Q6, Q7, Q8).
The gain of this amplifier is almost 1 and this amplifier has 2 outputs. They are non-inverted signal and inverted signal.
Non-inverted signal is fed to R-Y input terminal (IC1 pin ③) of demodulator and inverted signal to B-Y input terminal (IC1 pin②).

3-9-4. Phase Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q9, Q10, Q11, Q12, D12).
In this circuit, a variable capacitance diode (D2) is used to control the phase of color burst signal.
Anode voltage of D2 is applied by variable resistor RV2 and preset adjustment of phase is made by this variable resistor.
When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D2 via analog switcher (IC3). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal.
Analog switcher IC3 (2/3) activates to make short-circuit between input terminal pin ⑬ and output terminal pin ⑭ , only when COLOR STANDARD SELECTOR in the right side of drawer is selected to NTSC and otherwise pin ⑬ kept opn circuit.
As above phase controlled chrominance signal is derived from emitter of transistor Q12 and burst signal in this signal is gated by IC (1/3). The gated burst signal is fed to the burst input terminal pin ⑪ of demodulator IC1.

3-9-5. NTSC Demodulator

Block diagram of IC used for NTSC demodulator is shown in Figure 16.
This IC is designed for use of NTSC demodulator.
When chrominance signal is fed to pin ② and pin ③ , color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P.) to pin ⑬ , R-Y and B-Y color difference signals are obtained at output terminals pin ㉓ and pin ㉔ .
The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°.
Local oscillator (3.58MHz) is formed by CW oscillator in IC1 connected to the terminal pin⑤, ⑥, ⑦, ⑧ and external circuit. The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrier frequency 3.579545MHz.
Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin⑨ and ⑩ local oscillator is controlled by APC circuit.
The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.


㉔
㉓
㉒
㉑
⑳
⑲
⑱
⑰
⑯
⑮
⑭
⑬
B−Y DEMOD
COLOR CONTROL
ACC DET
ACC AMP
BAND PASS AMP BURST GATE
MATRIX
PAL SW
F F
KILLER AMP
IDENT AMP
R-Y DEMOD
CW OSC
PHASE CONTROL
IDENT KILLER DET
APC DET
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫

Block diagram of NTSC demodulator

Figure 16

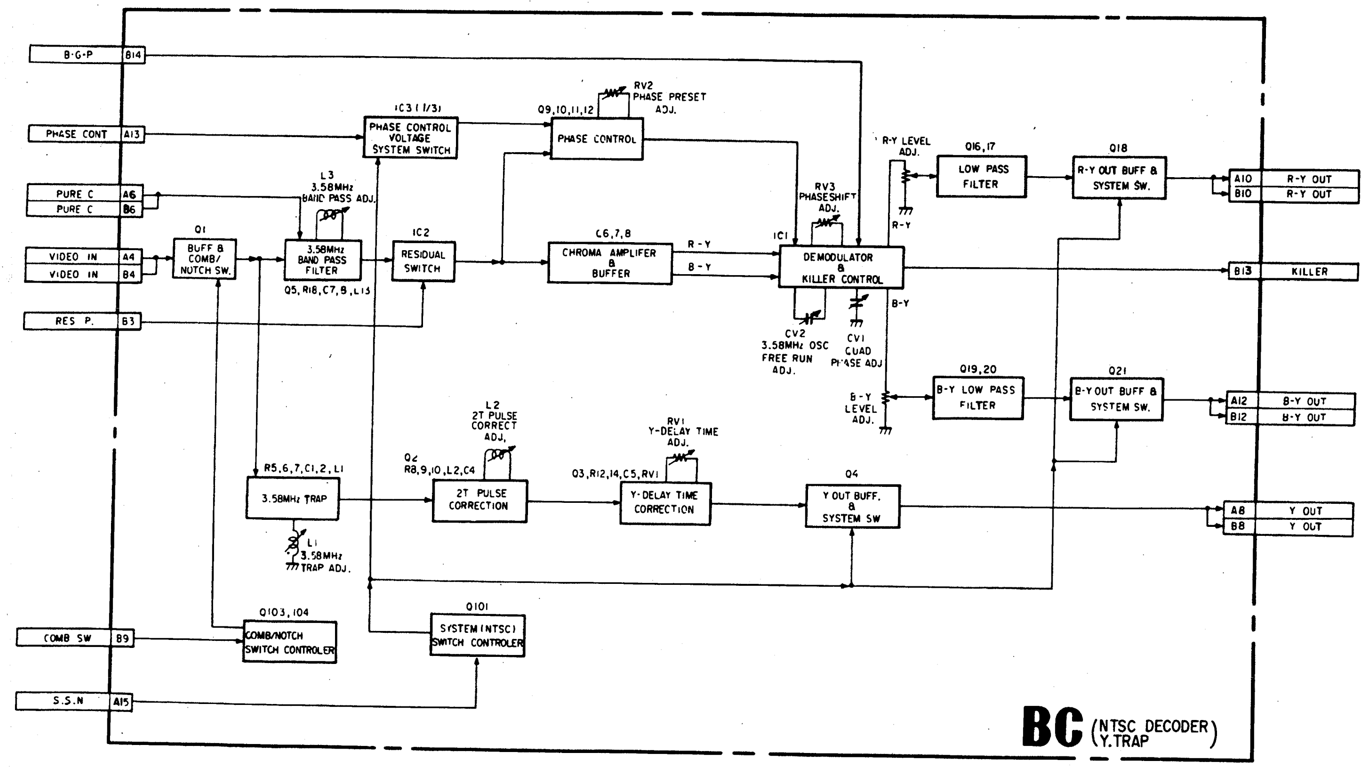
3-9-6. 3.58MHz Trap Circuit, Phase Compensation, Y Delay Correction Circuit

The composite video signal from emitter of transistor Q1 is fed to 3.58MHz trap circuit composed of resistor R5, R6, R7, capacitor C1 and inductor L1.
Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency.
Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4)
This circuit compensates phase delay of the signal at high frequency due to the trap circuit.
Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

3-9-7. Color Standard Selector

When NTSC system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101 is cut off and +12V line power source is not supplied to the demodulator circuit.

BLOCK DIAGRAM OF BC BOARD


B·G·P B14
PHASE CONT A13
PURE C A6
PURE C B6
VIDEO IN A4
VIDEO IN B4
RES P. B3
COMB SW B9
S.S.N A15
IC3 (1/3)
PHASE CONTROL VOLTAGE SYSTEM SWITCH
Q9,10,11,12
PHASE CONTROL
RV2 PHASE PRESET ADJ.
L3 3.58MHz BAND PASS ADJ.
Q1
BUFF & COMB/ NOTCH SW.
3.58MHz BAND PASS FILTER
Q5, R18, C7, 8, L13
IC2
RESIDUAL SWITCH
C6,7,8
CHROMA AMPLIFER & BUFFER
R - Y
B - Y
RV3 PHASESHIFT ADJ.
IC1
DEMODULATOR & KILLER CONTROL
CV2 3.58MHz OSC FREE RUN ADJ.
CV1 QUAD PHASE ADJ
R-Y LEVEL ADJ.
R-Y
B-Y
B-Y LEVEL ADJ.
Q16,17
LOW PASS FILTER
Q18
R-Y OUT BUFF & SYSTEM SW.
A10 R-Y OUT
B10 R-Y OUT
B13 KILLER
Q19,20
B-Y LOW PASS FILTER
Q21
B-Y OUT BUFF & SYSTEM SW.
A12 B-Y OUT
B12 B-Y OUT
R5,6,7,C1,2,L1
3.58MHz TRAP
L1 3.58MHz TRAP ADJ.
L2 2T PULSE CORRECT ADJ.
Q2 R8,9,10,L2,C4
2T PULSE CORRECTION
RV1 Y-DELAY TIME ADJ.
Q3,R12,14,C5,RV1
Y-DELAY TIME CORRECTION
Q4
Y OUT BUFF. & SYSTEM SW
A8 Y OUT
B8 Y OUT
Q103, 104
COMB/NOTCH SWITCH CONTROLER
Q101
SYSTEM (NTSC) SWITCH CONTROLER
BC (NTSC DECODER Y.TRAP)

(BVM-1415P ONLY)

3-10.PAL DEMODULATOR, Y TRAP CIRCUIT (BD BOARD)

The composite video signal (PAL) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 4.43 MHz trap circuit with Y signal and to band pass filter with chrominance signal.

3-10-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R12, capacitor C7, C8, inductor L3 and transistor Q5.
The center frequency of this filter is adjusted to the subcarrier frequency (4.43 MHz) by L3, and chrominance signal is derivied from Q5.

3-10-2. Residual SW Circuit

The chrominance signal derivied at transistor Q5 is fed to analog switcher IC2.
When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period.
When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate.
When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

3-10-3.Chroma Amplifier Circuit

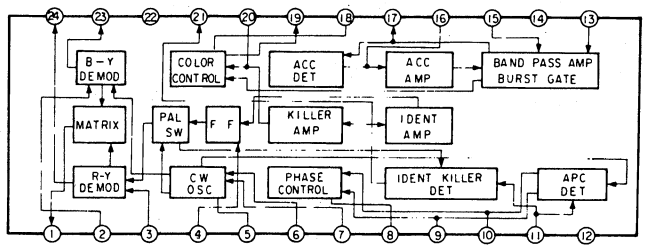
The chrominance signal from residual switch circuit (IC2 pin④) is fed to chroma amplifier circuit (Q19, Q36).
After the chroma signal is amplified by the inversion amplifier (gain: 1X), it is voltage divided by resistors R400 and R314 and then input to the R-Y input terminal (IC1, pin (3)) and B-Y input terminal (IC1, pin (2)) of the following demodulator circuit via the buffer (Q38).

3-10-4.Phase Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q6, Q7, Q8, Q9, D12).
In this circuit, a variable capacitance diode (D10) is used to control the phase of color burst signal.
Anode voltage of D10 is applied by variable resistor RV8 and preset adjustment of phase is made by this variable resistor.
When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D10 via analog switcher (IC5). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal.
When PAL-D is selected with the PAL switch inside the right side drawer, between pins ③ and ④ of IC5 becomes conductive and phase control becomes dependent on RV7, disabling the Phase Control of the right side front panel.
Analog switcher IC5 (1/3) activates to make short-circuit between input terminal pin ③ or ⑤ and output terminal pin④, only when COLOR STANDARD SELECTOR in the right side of drawer is selected to PAL and otherwise pin ⑤ kept open circuit.
As above phase controlled chrominance signal is derived from collector of transistor Q9 and burst signal in this signal is gated by IC6. The gated burst signal is fed to the burst input terminal pin ⑪ of demodulator IC1.

3-10-5.PAL Demodulator

Block diagram of IC used for PAL demodulator is shown in Figure 1. This IC is designed for use of NTSC demodulator.
When chrominance signal is fed to pin ② and pin ③, color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P.) to pin ⑬ , R-Y and B-Y color difference signals are obtained at output terminals pin ㉓ and pin ㉔
The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°.
Local oscillator (4.43 MHz) is formed by CW oscillator in IC1 connected to the terminal pin⑤, ⑥, ⑦, ⑧and external circuit.
The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrer frequency 4.433619 MHz.
Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin ⑨ and ⑩ local oscillator is controlled by APC circuit.
The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.



24
23
22
21
20
19
18
17
16
15
14
13
B-Y DEMOD
COLOR CONTROL
ACC DET
ACC AMP
BAND PASS AMP BURST GATE
MATRIX
PAL SW
F F
KILLER AMP
IDENT AMP
R-Y DEMOD
CW OSC
PHASE CONTROL
IDENT KILLER DET
APC DET
1
2
3
4
5
6
7
8
9
10
11
12

Block diagram of PAL demodulator

Figure 17

3-10-6. PAL-D Matrix and PAL S/D Switching Circuit

This circuit is further divided into circuits for the R-Y and B-Y signals, but the operation of both circuits is the same. So only the R-Y one will be explained.
R-Y signals input from the demodulator circuit are input to Q20 (BUFF) and Q21 (BUFF).
The signals input to Q21 are then input to pin ② of the analog switcher (IC5). When PAL S has been selected, between pins ② and ⑮ becomes conductive and the signals are supplied to the following circuit via Q33 (BUFF).
The signals input to Q20 are formed by IC7 and Q18.
Bias is controlled by a clamp circuit and is input to pin ⑮ of the 1H delay line (IC3). The DC level of the input is adjusted to the optimum value by using RV9.
IC3, driven by the 10.64 MHz clock signal generated by the clock generator circuit configured with XZ, Q34 and Q35, delays the input signal by 1H cycle and outputs it from pin ⑪ .
The high frequency component of the signal thus output is removed by the low-pass filter configured with Q22 and Q23, after which the signal is input to the following PAL-D matrix circuit.
The PAL-D matrix circuit is configured with R100, R101 and Q24.
The signal that was not delayed is input through R100 while the 1H delayed signal is input through R101 at a ratio of 1/2.
The PAL-D signal added to the base of Q24 is obtained from its emitter. The signal obtained from the Q24 emitter is input to pin ① of IC5. When PAL-D is selected, between pins ① and ⑮ becomes conductive and the signal is supplied to the following circuit via Q33 (BUFF).

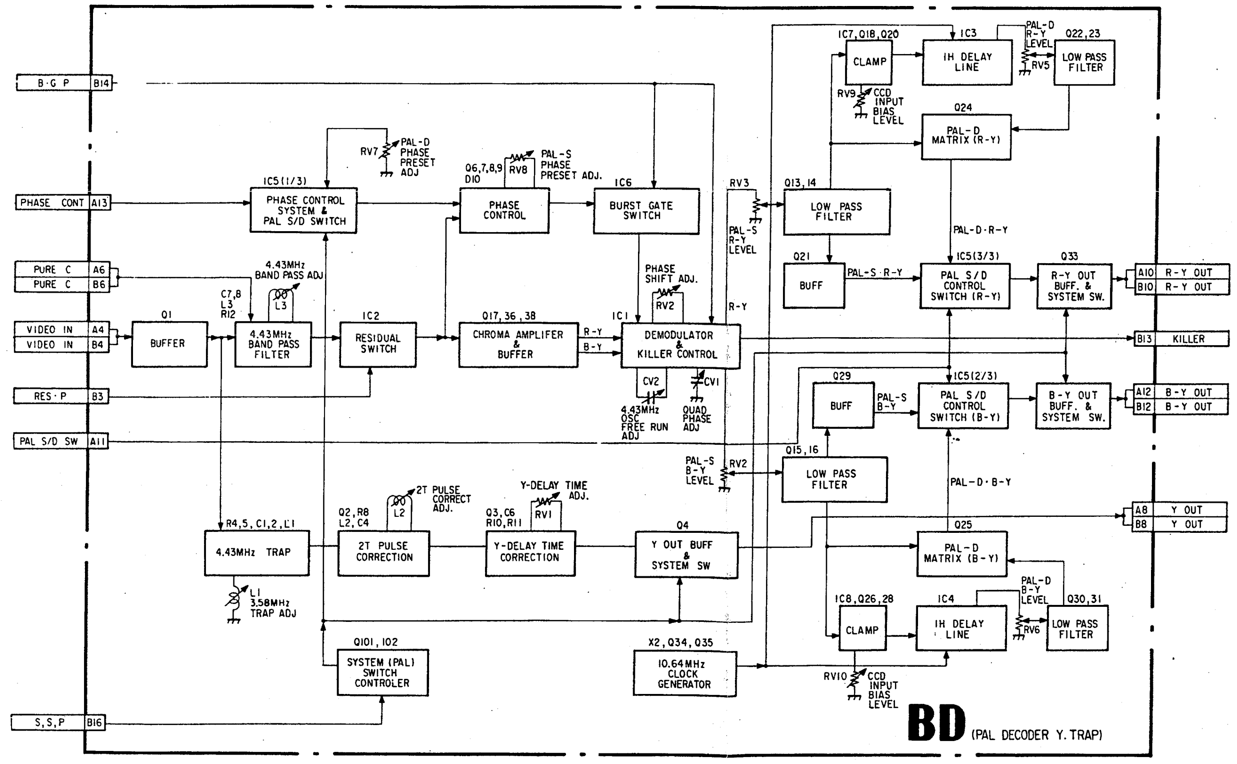
3-10-7. 4.43 MHz Trap Circuit, Phase Compensation, Y Delay Correction Circuit

The composite video signal from the emitter of transistor Q1 is fed to 4.43 MHz trap circuit composed of resistor R5, R6, R7, capacitor C1, C2 and inductor L1.
Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency.
Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4)
This circuit compensates phase delay of the signal at high frequency due to the trap circuit.
Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

3-10-8. Color Standard Selector

When PAL system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101, Q102 are cut off and ±12V line power source is not supplied to the demodulator circuit.

BLOCK DIAGRAM OF BD (PAL) BOARD



B·G P
B14
PHASE CONT
A13
PURE C
A6
PURE C
B6
VIDEO IN
A4
VIDEO IN
B4
RES·P
B3
PAL S/D SW
A11
S,S,P
B16
IC5(1/3)
PHASE CONTROL SYSTEM & PAL S/D SWITCH
RV7
PAL-D PHASE PRESET ADJ
Q6,7,8,9 D10
RV8
PAL-S PHASE PRESET ADJ.
PHASE CONTROL
IC6
BURST GATE SWITCH
4.43MHz BAND PASS ADJ
C7,8 L3 R12
L3
Q1
BUFFER
4.43MHz BAND PASS FILTER
IC2
RESIDUAL SWITCH
Q17,36,38
CHROMA AMPLIFER & BUFFER
R-Y
B-Y
IC1
PHASE SHIFT ADJ.
RV2
DEMODULATOR & KILLER CONTROL
CV2
CV1
4.43MHz OSC FREE RUN ADJ
QUAD PHASE ADJ
R4,5,C1,2,L1
4.43MHz TRAP
L1
3.58MHz TRAP ADJ
Q2,R8 L2,C4
L2
2T PULSE CORRECT ADJ.
2T PULSE CORRECTION
Q3,C6 R10,R11
RV1
Y-DELAY TIME ADJ.
Y-DELAY TIME CORRECTION
Q4
Y OUT BUFF & SYSTEM SW
Q101,102
SYSTEM (PAL) SWITCH CONTROLER
X2,Q34,Q35
10.64MHz CLOCK GENERATOR
RV3
PAL-S R-Y LEVEL
R-Y
Q13,14
LOW PASS FILTER
Q21
BUFF
PAL-S·R-Y
IC7,Q18,Q20
CLAMP
RV9
CCD INPUT BIAS LEVEL
IC3
1H DELAY LINE
PAL-D R-Y LEVEL
RV5
Q22,23
LOW PASS FILTER
Q24
PAL-D MATRIX (R-Y)
PAL-D·R-Y
IC5(3/3)
PAL S/D CONTROL SWITCH (R-Y)
Q33
R-Y OUT BUFF. & SYSTEM SW.
A10
R-Y OUT
B10
R-Y OUT
B13
KILLER
Q29
BUFF
PAL-S B-Y
IC5(2/3)
PAL S/D CONTROL SWITCH (B-Y)
B-Y OUT BUFF. & SYSTEM SW.
A12
B-Y OUT
B12
B-Y OUT
PAL-S B-Y LEVEL
RV2
Q15,16
LOW PASS FILTER
PAL-D·B-Y
A8
Y OUT
B8
Y OUT
Q25
PAL-D MATRIX (B-Y)
IC8,Q26,28
CLAMP
IC4
1H DELAY LINE
PAL-D B-Y LEVEL
RV6
Q30,31
LOW PASS FILTER
RV10
CCD INPUT BIAS LEVEL
BD (PAL DECODER Y.TRAP)

(BVM-1415PM ONLY)

3-11. PAL-M DEMODULATOR, Y TRAP CIRCUIT (BM BOARD)

The composite video signal supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 3.58 MHz trap circuit with Y signal and to band pass filter with chrominance signal.

3-11-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R12, capacitor C7, C8, inductor L3 and transistor Q5.
The center frequency of this filter is adjusted to the subcarrier frequency (3.58 MHz) by L3, and chrominance signal is derived from Q5.

3-11-2. Residual SW Circuit

The chrominance signal derivied at transistor Q5 is fed to analog switcher IC2.
When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period.
When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate.
When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

3-11-3. Chroma Amplifier Circuit

The chrominance signal from residual switch circuit (IC2 pin④) is fed to chroma amplifier circuit (Q19, Q36).
After the chroma signal is amplified by the inversion amplifier (gain: 1X), it is voltage divided by resistors R400 and R314 and then input to the R-Y input terminal (IC1, pin (3)) and B-Y input terminal (IC1, pin (2)) of the following demodulator circuit via the buffer (Q38).

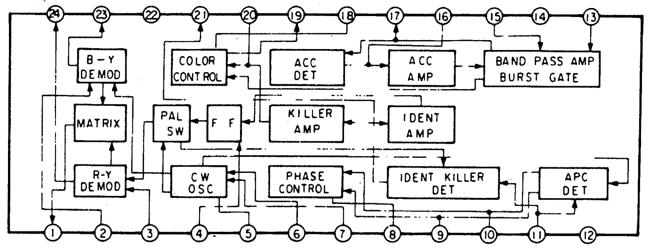
3-11-4. Phase Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q6, Q7, Q8, Q9, D12).
In this circuit, a variable capacitance diode (D10) is used to control the phase of color burst signal.
Anode voltage of D10 is applied by variable resistor RV8 and preset adjustment of phase is made by this variable resistor.
When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D10 via analog switcher (IC5). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal.
When PAL-D is selected with the PAL switch inside the right side drawer, between pins ③ and ④ of IC5 becomes conductive and phase control becomes dependent on RV7, disabling the Phase Control of the right side front panel.

Analog switcher IC5 (1/3) activates to make short-circuit between input terminal pin ③ or ⑤ and output terminal pin④, only when COLOR STANDARD SELECTOR in the right side of drawer is selected to PAL and otherwise pin ⑤ kept open circuit.
As above phase controlled chrominance signal is derived from collector of transistor Q9 and burst signal in this signal is gated by IC6. The gated burst signal is fed to the burst input terminal pin ⑪ of demodulator IC1.

3-11-5. PAL-M Demodulator

Block diagram of IC used for PAL demodulator is shown in Figure 1. This IC is designed for use of NTSC demodulator.
When chrominance signal is fed to pin ② and pin ③, color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P.) to pin ⑬, R-Y and B-Y color difference signals are obtained at output terminals pin ㉓ and pin ㉔
The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°.
Local oscillator (3.58 MHz) is formed by CW oscillator in IC1 connected to the terminal pin⑤, ⑥, ⑦, ⑧ and external circuit.
The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrer frequency 3.575611 MHz.
Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin ⑨ and ⑩ local oscillator is controlled by APC circuit.
The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.



㉔
㉓
㉒
㉑
⑳
⑲
⑱
⑰
⑯
⑮
⑭
⑬
B-Y DEMOD
COLOR CONTROL
ACC DET
ACC AMP
BAND PASS AMP BURST GATE
MATRIX
PAL SW
F F
KILLER AMP
IDENT AMP
R-Y DEMOD
CW OSC
PHASE CONTROL
IDENT KILLER DET
APC DET
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫

Block diagram of PAL-M demodulator

Figure 18

3-11-6. PAL-D Matrix and PAL S/D Switching Circuit

This circuit is further divided into circuits for the R-Y and B-Y signals, but the operation of both circuits is the same. So only the R-Y one will be explained.
R-Y signals input from the demodulator circuit are input to Q20 (BUFF) and Q21 (BUFF).
The signals input to Q21 are then input to pin ② of the analog switcher (IC5). When PAL S has been selected, between pins ② and ⑮ becomes conductive and the signals are supplied to the following circuit via Q33 (BUFF).
The signals input to Q20 are formed by IC7 and Q18.
Bias is controlled by a clamp circuit and is input to pin ⑮ of the 1H delay line (IC3). The DC level of the input is adjusted to the optimum value by using RV9.
IC3, driven by the 10.64 MHz clock signal generated by the clock generator circuit configured with XZ, Q34 and Q35, delays the input signal by 1H cycle and outputs it from pin ⑪.

The high frequency component of the signal thus output is removed by the low-pass filter configured with Q22 and Q23, after which the signal is input to the following PAL-D matrix circuit.
The PAL-D matrix circuit is configured with R100, R101 and Q24.
The signal that was not delayed is input through R100 while the 1H delayed signal is input through R101 at a ratio of 1/2.
The PAL-D signal added to the base of Q24 is obtained from its emitter. The signal obtained from the Q24 emitter is input to pin ① of IC5. When PAL-D is selected, between pins ① and ⑮ becomes conductive and the signal is supplied to the following circuit via Q33 (BUFF).

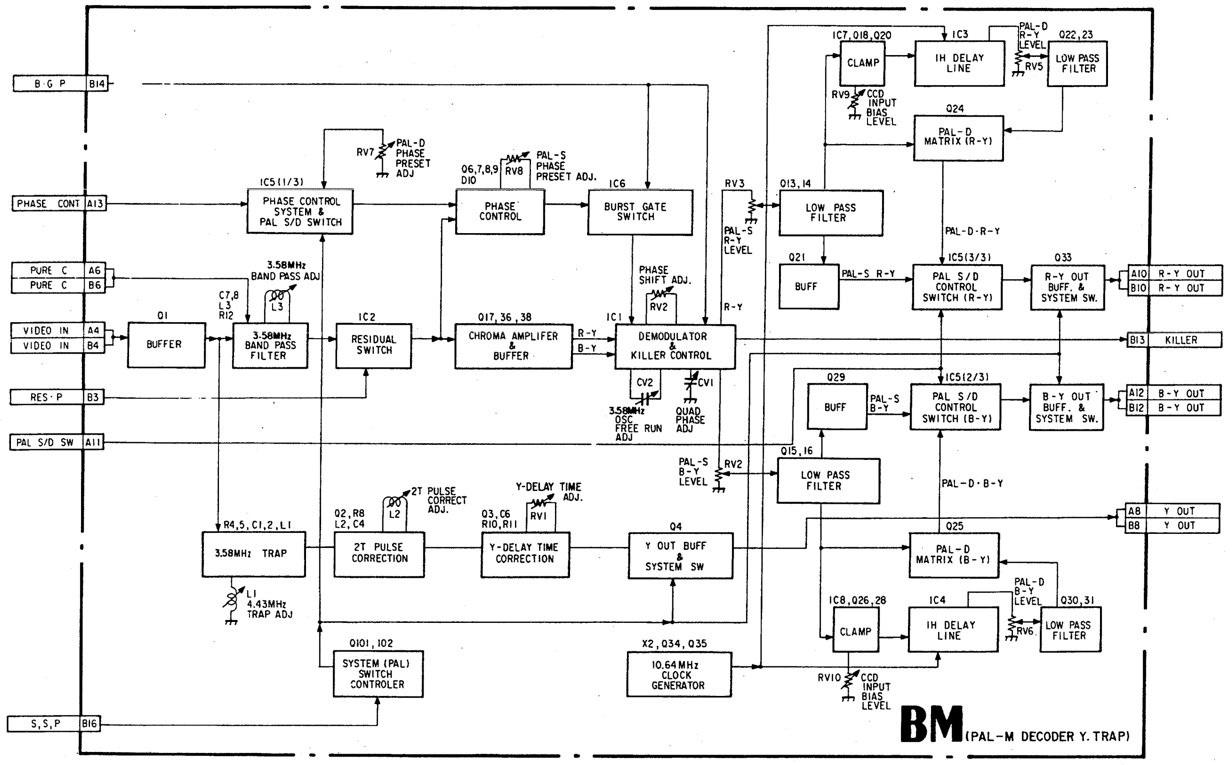
3-11-7. 3.58 MHz Trap Circuit, Phase Compensation, Y Delay Correction Circuit

The composite video signal from the emitter of transistor Q1 is fed to 3.58 MHz trap circuit composed of resistor R5, R6, R7, capacitor C1, C2 and inductor L1.
Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency.
Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4)
This circuit compensates phase delay of the signal at high frequency due to the trap circuit.
Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

3-11-8. Color Standard Selector

When PAL system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101, Q102 are cut off and ±12V line power source is not supplied to the demodulator circuit.

BLOCK DIAGRAM OF BM (PAL-M) BOARD



B·G P
B14
PHASE CONT
A13
PURE C
A6
PURE C
B6
VIDEO IN
A4
VIDEO IN
B4
RES·P
B3
PAL S/D SW
A11
S,S,P
B16
RV7
PAL-D PHASE PRESET ADJ
IC5(1/3)
PHASE CONTROL SYSTEM & PAL S/D SWITCH
Q6,7,8,9 D10
RV8
PAL-S PHASE PRESET ADJ.
PHASE CONTROL
IC6
BURST GATE SWITCH
3.58MHz BAND PASS ADJ
C7,8 L3 R12
L3
Q1
BUFFER
3.58MHz BAND PASS FILTER
IC2
RESIDUAL SWITCH
Q17, 36, 38
CHROMA AMPLIFER & BUFFER
R-Y
B-Y
IC1
DEMODULATOR & KILLER CONTROL
PHASE SHIFT ADJ.
RV2
CV2
3.58MHz OSC FREE RUN ADJ
CV1
QUAD PHASE ADJ
RV3
PAL-S R-Y LEVEL
R-Y
Q13, 14
LOW PASS FILTER
IC7, Q18, Q20
CLAMP
RV9
CCD INPUT BIAS LEVEL
IC3
1H DELAY LINE
PAL-D R-Y LEVEL
RV5
Q22, 23
LOW PASS FILTER
Q24
PAL-D MATRIX (R-Y)
PAL-D-R-Y
Q21
BUFF
PAL-S R-Y
IC5(3/3)
PAL S/D CONTROL SWITCH (R-Y)
Q33
R-Y OUT BUFF. & SYSTEM SW.
A10
R-Y OUT
B10
R-Y OUT
B13
KILLER
Q29
BUFF
PAL-S B-Y
IC5(2/3)
PAL S/D CONTROL SWITCH (B-Y)
B-Y OUT BUFF. & SYSTEM SW.
A12
B-Y OUT
B12
B-Y OUT
PAL-S B-Y LEVEL
RV2
Q15, 16
LOW PASS FILTER
PAL-D·B-Y
A8
Y OUT
B8
Y OUT
R4,5,C1,2,L1
3.58MHz TRAP
L1 4.43MHz TRAP ADJ
Q2, R8 L2, C4
L2
2T PULSE CORRECT ADJ.
2T PULSE CORRECTION
Q3, C6 R10, R11
RV1
Y-DELAY TIME ADJ.
Y-DELAY TIME CORRECTION
Q4
Y OUT BUFF & SYSTEM SW
Q25
PAL-D MATRIX (B-Y)
IC8, Q26, 28
CLAMP
IC4
1H DELAY LINE
PAL-D B-Y LEVEL
RV6
Q30, 31
LOW PASS FILTER
Q101, 102
SYSTEM (PAL) SWITCH CONTROLER
X2, Q34, Q35
10.64MHz CLOCK GENERATOR
RV10
CCD INPUT BIAS LEVEL
BM (PAL-M DECODER Y. TRAP)

3-12. VERTICAL DEFLECTION OUTPUT CIRCUIT CONVERGENCE OUTPUT CIRCUIT (EB BOARD)

3-12-1. EB BOARD

Vertical Deflection Output Circuit

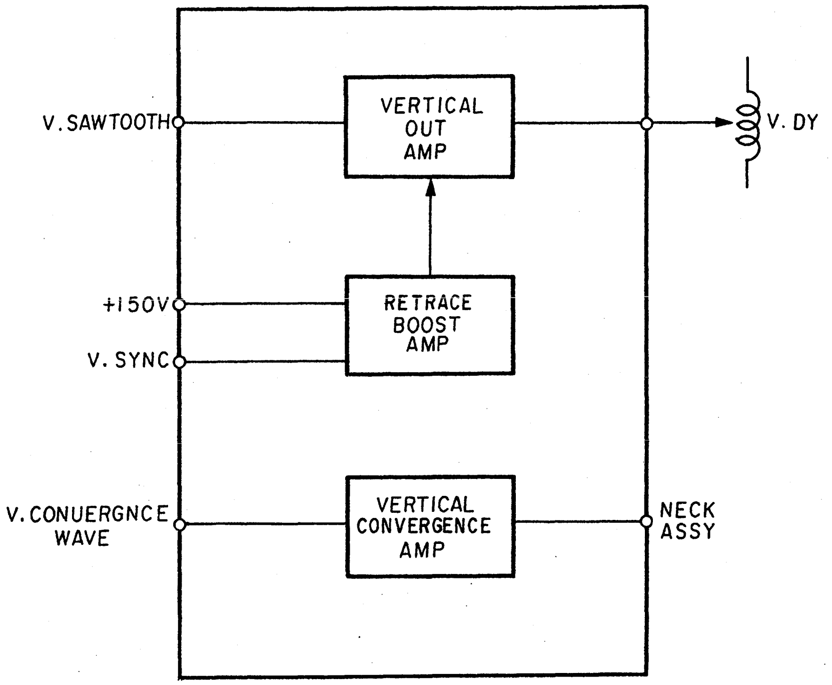
The vertical deflection output circuit consists of the SEPP AMP. directly connected to DC power and composed of Q1 to Q5. and the retrace pulse voltage boost-up circuit. composed of Q7 and Q8.

This SEPP AMP receives. as an input. the sawtooth wave voltage (added with the T&B pincushion compensating voltage and the vertical linearity compensating voltage) generated at the D board.

Since the SEPP AMP is directly connected to the load (V.DY). the V.CENT circuit needs only DC current supplied to V sawtooth from ± power supply.

The boost-up circuit is turned on by the V.D signal and supplies energy to the output circuit during the vertical retrace period.

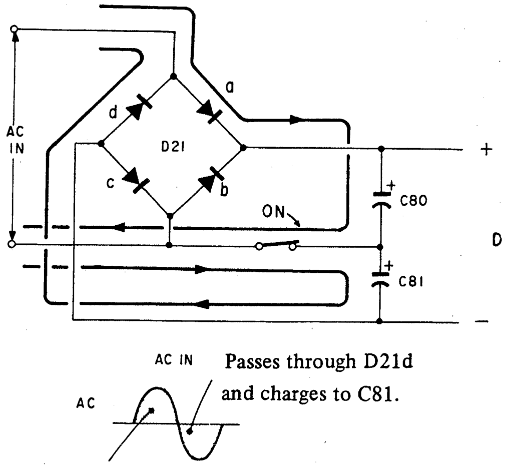
BLOCK DIAGRAM OF EB BOARD


V.SAWTOOTH
VERTICAL OUT AMP
V. DY
+150V
V. SYNC
RETRACE BOOST AMP
V.CONUERGNCE WAVE
VERTICAL CONVERGENCE AMP
NECK ASSY

3-13. POWER SUPPLY CIRCUIT (GA, GB BOARDS)

3-13-1. AC Power Supply, Rectifier Circuit

Voltage selector located at the rear side of the unit should be selected to the local line voltage (AC 100/120V or 220/240V).
In case of AC 100/120V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a double multiple rectifier.
See Figure 18(a).
In case of AC 220/240V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a full-wave rectifier.
See Figure 18(b).


AC IN
D21
a
b
c
d
ON
C80
C81
DC
+
–
AC
AC IN

Passes through D21d and charges to C81.

Passes through D21a and charges to C80.

Figure 18(a)

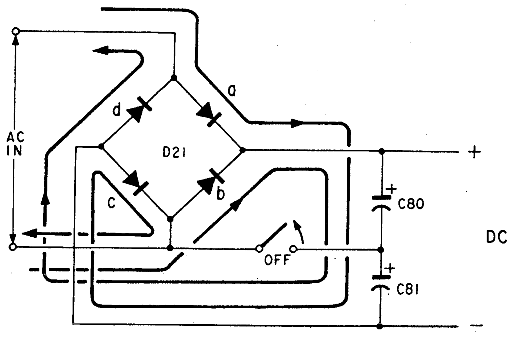

AC IN
D21
a
b
c
d
OFF
C80
C81
DC
+
–

Figure 18(b)

3-13-2. Degauss Circuit

There are 2 posistors (PTH1, PTH2) in the degaussing circuit. One is used for AC 100/120V operation, the other is for AC 220/240V operation, these posistors are switched by voltage selector.
This degaussing circuit is turned ON and OFF by using Relay (RY1) automatically.
When power is turned ON, Automatic degaussing starts to work and a few seconds later stops automatically.
Also Manual degaussing is available if necessary after a few minutes power is turned on when posistor (PTH1 or PTH2) gets cool down.
This manual degaussing is operated by a push of button (Degauss Switch) at the left of the front panel.
When degaussing circuit starts to work, Q11 transistor turns on by time constant circuit composed of resistors R88, 91 and capacitor C74. Q11 drives Q12 transistor. Relay (RY1) is driven by Q12. Time constant circuit keeps degaussing circuit to activate for several seconds until degaussing is finished.

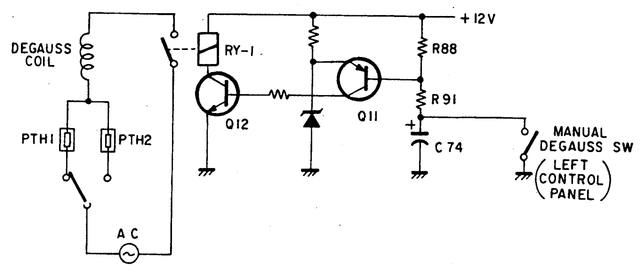

DEGAUSS COIL
RY-1
+12V
R88
R91
Q12
Q11
C74
PTH1
PTH2
AC
MANUAL DEGAUSS SW
(LEFT CONTROL PANEL)

Figure 19

3-13-3. Starter Circuit

Blocking oscillator composed of integrated circuit IC1 and transformer T4 operates when power is turned on. DC voltage obtained by diode D7 and capacitor C57 as a rectifier at the secondary circuit of T4 is supplied to IC2 and IC3, when AC voltage is higher than 50 ~ 70V (voltage selector at 100/120V position). Then power supply regulator starts to work and +15V line power supply is provided to IC2 and IC3 via diode D20, also voltage from T4 stops providing power supply to IC2 and IC3 because blocking oscillator is shut down by voltage generated at primary windings of SRT (Switching Regulator Transformer).

3-13-4. Switching Regulator Circuit

Block diagram is shown in Figure 20. This is half bridge type of switching regulator in this model.

Following Description is the Theory of Half-Bridge Switching Regulator.

DC voltage E_{IN} rectified from AC voltage in AC power rectifier section is divided by capacitor C1 and C2. C1 and C2 have almost same value. Q1 (contains 2 transistors) operates as a switch driven by PWM modulated pulse via T2 (Drive Transformer). Switching current flows through primary windings of T1 (SRT) by switching transistor Q1 via T3 (Current Transformer).
Thus output voltages are generated at secondary windings of T1.

Practical Circuit Used in this Model

There are 2 switching regulators in this power supply. One is for low voltage power supply, ±15V, ±18V and +5V. The other is for high voltage ±150V power supply.
Low voltages are generated by IC2, T1, T2, T3 and Q1.
High voltages are generated by IC3, T6, T7 and Q2
Refer to block diagram
Current Transformer T3 and T7 detects excess current in transistor Q1 and Q2 for the protection of damage.

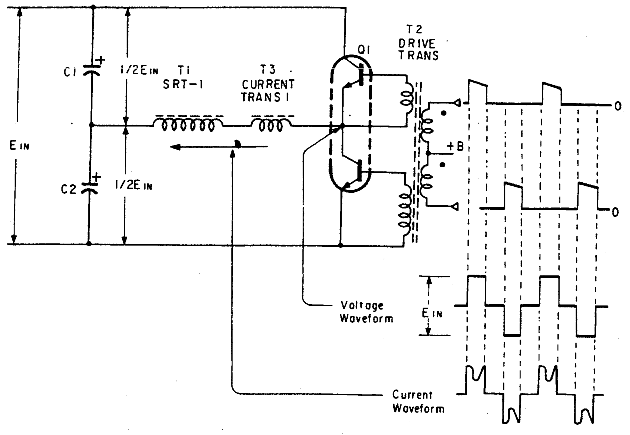
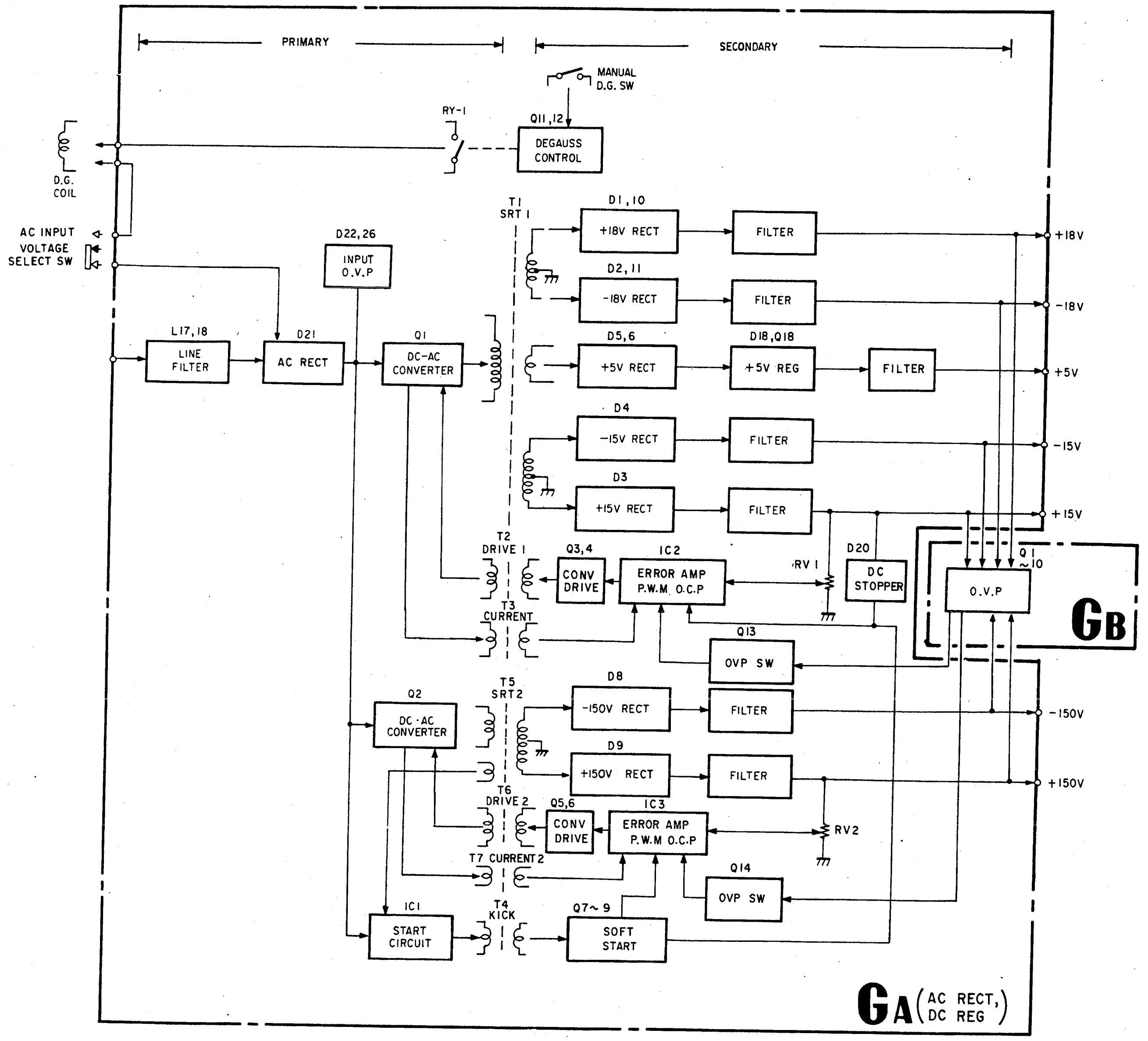

C1
C2
1/2E IN
1/2E IN
E IN
T1
SRT-1
T3
CURRENT
TRANS 1
Q1
T2
DRIVE
TRANS
+B
0
0
E IN
Voltage Waveform
Current Waveform

Figure 20

3-13-5. Over Voltage Protector

Daughter board GB is mounted in mother board GA.
GB board works for over voltage protection.
When output voltage gets higher value than predetermined value, over voltage protector activates to prevent damage of unit.

BLOCK DIAGRAM OF GA, GB BOARD


PRIMARY
SECONDARY
MANUAL D.G. SW
RY-1
Q11,12
DEGAUSS CONTROL
D.G. COIL
AC INPUT VOLTAGE SELECT SW
D22,26
INPUT O.V.P
L17,18
LINE FILTER
D21
AC RECT
Q1
DC-AC CONVERTER
T1
SRT 1
D1,10
+18V RECT
D2,11
-18V RECT
D5,6
+5V RECT
D18,Q18
+5V REG
D4
-15V RECT
D3
+15V RECT
FILTER
+18V
-18V
+5V
-15V
+15V
T2
DRIVE 1
Q3,4
CONV DRIVE
IC2
ERROR AMP P.W.M O.C.P
RV1
D20
DC STOPPER
Q1 ~10
O.V.P
GB
T3
CURRENT
Q13
OVP SW
Q2
DC-AC CONVERTER
T5
SRT2
D8
-150V RECT
D9
+150V RECT
-150V
+150V
T6
DRIVE 2
Q5,6
CONV DRIVE
IC3
ERROR AMP P.W.M O.C.P
RV2
T7 CURRENT 2
Q14
OVP SW
IC1
START CIRCUIT
T4
KICK
Q7~9
SOFT START
GA (AC RECT, DC REG)

3-14. D BOARD

- **Waveform Generation circuit (IC2, 7, 8, 9, 11, 18, 24, 25)**

IC2 is a waveform generator. With the input of both horizontal and vertical sync signals, this IC generates the following signals:

- H rate saw tooth waveform signal (HS)
- H rate parabolic waveform signal (HP)
- V rate saw tooth waveform signal (VS)
- V rate parabolic waveform signal (VP)
- Modulated waveform signal
- H saw × V saw (HS × VS)
- H saw × V parabola (HS × VP)
- H parabola × V saw (HP × VP)
- H parabola × V parabola (HP × VP)
- H.SW PULSE, V.SW PULSE

H.SW and V.SW pulses are those which rise just in the middle of the trace period and fall in the retrace period.

- **Scan Switching circuit (IC3, 4, 7, 24)**

In the scan switching circuit, NORMAL, UNDER or SET-UP scanning is performed.

In H.SAW GEN. circuit, the H rate saw wave is output by the integrator of IC13 using the H.SW pulses from IC2 as reset pulses. The H rate saw thus generated is delayed about 1/2H as compared with that of the IC2.

- **H.BLK.GEN., HV.DRIVE GEN. circuit (IC14, 15)**

In the H.BLK.GEN. circuit, the H.BLK.P required for horizontal blanking is generated from the H.SAW waveform signal which is output signal of IC13. The HV.DRIVE GEN. is the same. In the H.Delay and H.PHASE circuits, like H.BLK.GEN., the D.AFC.P is output by comparating the H.SAW output signals of IC13. Further, this circuit performs H. PHASE and H.DELAY by not changing the pulse width of D.AFC.P but changing only the position.

- **H.OSC, H.AFC circuits (IC18, 19, Q10)**

IC19 is an IC which incorporates the H.OSC and H.AFC circuits. In this IC, the frequency and phase of H.OSC are controlled by comparing the phases of D.AFC.P and H.SYNC. This unit can vary the AFC time constant by the AFC.SW.

- **SIN.GEN., COS.GEN. circuits (IC5, 6)**

In the SIN.GEN. and COS.GEN. circuits, the SIN approximate wave is output by integrating the V rate parabola once and the COS spproximate wave is output by integrating it twice.

- **H.WIDTH circuit (IC3, 11)**

In the H.WIDTH circuit, the correction waveforms such as SIDE PIN, SIDE PIN TILT, H.WIDTH, etc. are output by adding VP, VS, H, SIZE, etc. (H.WIDTH)

- **H.LIN circuit (IC10)**

In the H.LIN circuit, correction waveforms such as H.LIN.GAIN, H.LIN.BALANCE, ect. are output by adding HP, HS, etc. (H.LIN)

- **V SAW circuit (IC10)**

In the V.SAW circuit, the correction waveforms such as V cycle saw wave, V.LIN. GAIN, V.LIN. BALANCE, V GEN.T.X BOW, TOP BOTTOM PIN, etc. are output by adding VS, DC, V.SIN, VP, HS, HS × VS, etc. (V.SAW)

- **H.CENT circuit (IC16)**

In the H.CENT circuit, the correction waveforms of H CENT and Y BOW are output by adding VP and DC. (H.CENT)

- **X.CONV circuit (IC8, 12, Q6)**

In the X.CONV circuit, the correction waveform of vertical misconvergence is output by adding VP and DC which are generated separately in upper side and lower side of the picture screen.

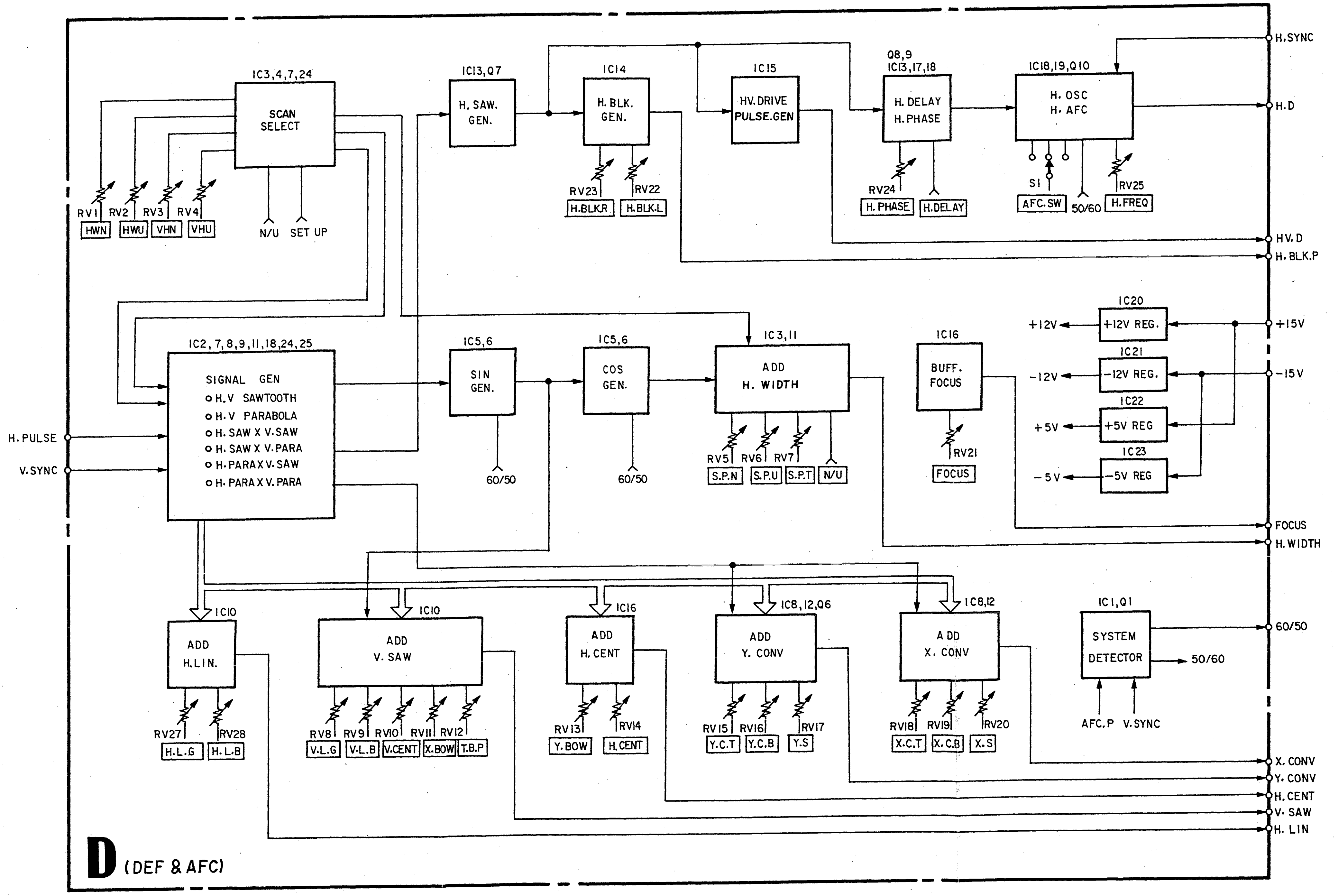
- **Y.CONV circuit (IC8, 12)**

In the Y.CONV circuit, the correction waveform of horizontal misconvergence is output by adding VP and DC which are generated separately in upper side and lower side of the picture screen.

- **System Detector circuit (IC1, Q1)**

With the input at both horizontal and vertical sync signals IC1 distingwishes between 525/60 and 625/50.

BLOCK DIAGRAM OF D BOARD


IC3,4,7,24
SCAN SELECT
RV1
RV2
RV3
RV4
HWN
HWU
VHN
VHU
N/U
SET UP
IC13,Q7
H. SAW. GEN.
IC14
H. BLK. GEN.
RV23
RV22
H.BLK.R
H.BLK.L
IC15
HV. DRIVE PULSE.GEN
Q8,9 IC13,17,18
H. DELAY H. PHASE
RV24
H. PHASE
H.DELAY
IC18,19,Q10
H. OSC H. AFC
S1
AFC.SW
50/60
RV25
H.FREQ
H.SYNC
H.D
HV. D
H. BLK.P
IC2, 7, 8, 9, 11, 18, 24, 25
SIGNAL GEN
o H.V SAWTOOTH
o H.V PARABOLA
o H. SAW X V.SAW
o H. SAW X V. PARA
o H. PARA X V. SAW
o H. PARA X V. PARA
H. PULSE
V.SYNC
IC5,6
SIN GEN.
60/50
IC5,6
COS GEN.
60/50
IC3,11
ADD H. WIDTH
RV5
RV6
RV7
S.P.N
S.P.U
S.P.T
N/U
IC16
BUFF. FOCUS
RV21
FOCUS
IC20
+12V
+12V REG.
+15V
IC21
-12V
-12V REG.
-15V
IC22
+5V
+5V REG
IC23
-5V
-5V REG
FOCUS
H. WIDTH
IC10
ADD H.LIN.
RV27
RV28
H.L.G
H.L.B
IC10
ADD V. SAW
RV8
RV9
RV10
RV11
RV12
V.L.G
V.L.B
V.CENT
X.BOW
T.B.P
IC16
ADD H. CENT
RV13
RV14
Y. BOW
H. CENT
IC8,12,Q6
ADD Y. CONV
RV15
RV16
RV17
Y.C.T
Y.C.B
Y.S
IC8,12
ADD X. CONV
RV18
RV19
RV20
X.C.T
X.C.B
X.S
IC1,Q1
SYSTEM DETECTOR
50/60
AFC.P
V.SYNC
60/50
X. CONV
Y. CONV
H. CENT
V. SAW
H. LIN
D (DEF & AFC)

3-15. HORIZONTAL DEFLECTION OUTPUT CIRCUIT AND HIGN VOLTAGE REGULATOR CIRCUIT (EA BLOCK)

3-15-1. Horizontal Deflection Output Circuit

The horizontal deflection output circuit controls H out of Q11, driving T2 at Q10 by the H drive pulse generated on the board D.
The power supply circuit to H out improves the power supply efficiency using -150V and DC-DC converter with IC1 and Q7. IC1 consists of the error amplifier and the P.W.M. circuit. IC1, being supplied with the side pin-cushion correction waveform and the H. width adjusting voltage from the board D, controls the DC-DC converter output.

3-15-2. H. Center Adjusting Circuit

The H. center adjusting circuit, generating a ± power source from the secondary output of T3 (H.O.T.), flows the correction current of the horizontal center position and Y bow bend to the horizontal deflection yoke.

3-15-3. H. Linearity Correction Circuit

The H. LIN. circuit amplifies the H. LIN. correction waveform generated on the board D by the SEPP amplifiers of Q2 to Q5, and supplies these to the horizontal deflection yoke from the capacitor for S curve correction.

3-15-4. High Voltage Regulator Circuit

The high voltage regulator of this unit uses the DC-DC converter type power supply circuit in order to reduce power consumption. In general, the movement of the high voltage regulator is as follows:
The high voltage regulator consists of Q16, Q18, IC3 (1/2), IC2 (IC for P.W.M. control) and HVR.
The detection voltage is obtained by directly dividing HV voltage with resistors in HVR.
IC2 compares this detection voltage with the reference voltage located outside IC2 (error amplification) and performs P.W.M. modulation. Q16 is driven by output of IC2 which is made PWM modulation and controls the voltage supplied to the FBT drive circuit (Q17, Q18, FBT).
The HV voltage is adjusted by changing the detection voltage. Since the detection voltage of HVR drops when the anode current is increasing and the high voltage drops, then the ON period of Q16 is widened.
As a result of this, as the peak current of the corrector current of Q18 increases, the energy which is stored in C68 via FBT is enlarged and the high voltage is regulated by increasing electric potential of C68.
When Q18 is turned off, a flyback pulse is generated by the synthesized resonance action by inductance of L.O.T, H.O.T and the C65, C66, then, the HV voltage is generated by transfered the flyback pulse to the secondary side. (See Figure)

3-15-5. High Voltage Protector

The detection voltage for the high voltage protector is obtained by directly by dividing HV voltage with resistors in HVR.
For the high voltage protector circuit, when this detection voltage rises more than the reference voltage by the high voltage rise, output of the comparator IC4 (1/2) becomes high and the drive pulse of the high voltage converter is cut off by making D27 (SCR) gate on. Consequently, the high voltage output circuit is stopped.
Furthermore the threshold voltage for this protector is determined by not only the reference voltage obtained by zener diode but also the voltage obtained by ABL voltage (at 9 pin of FBT) in addition to the reference voltage.

3-15-6. High Voltage Current Protector

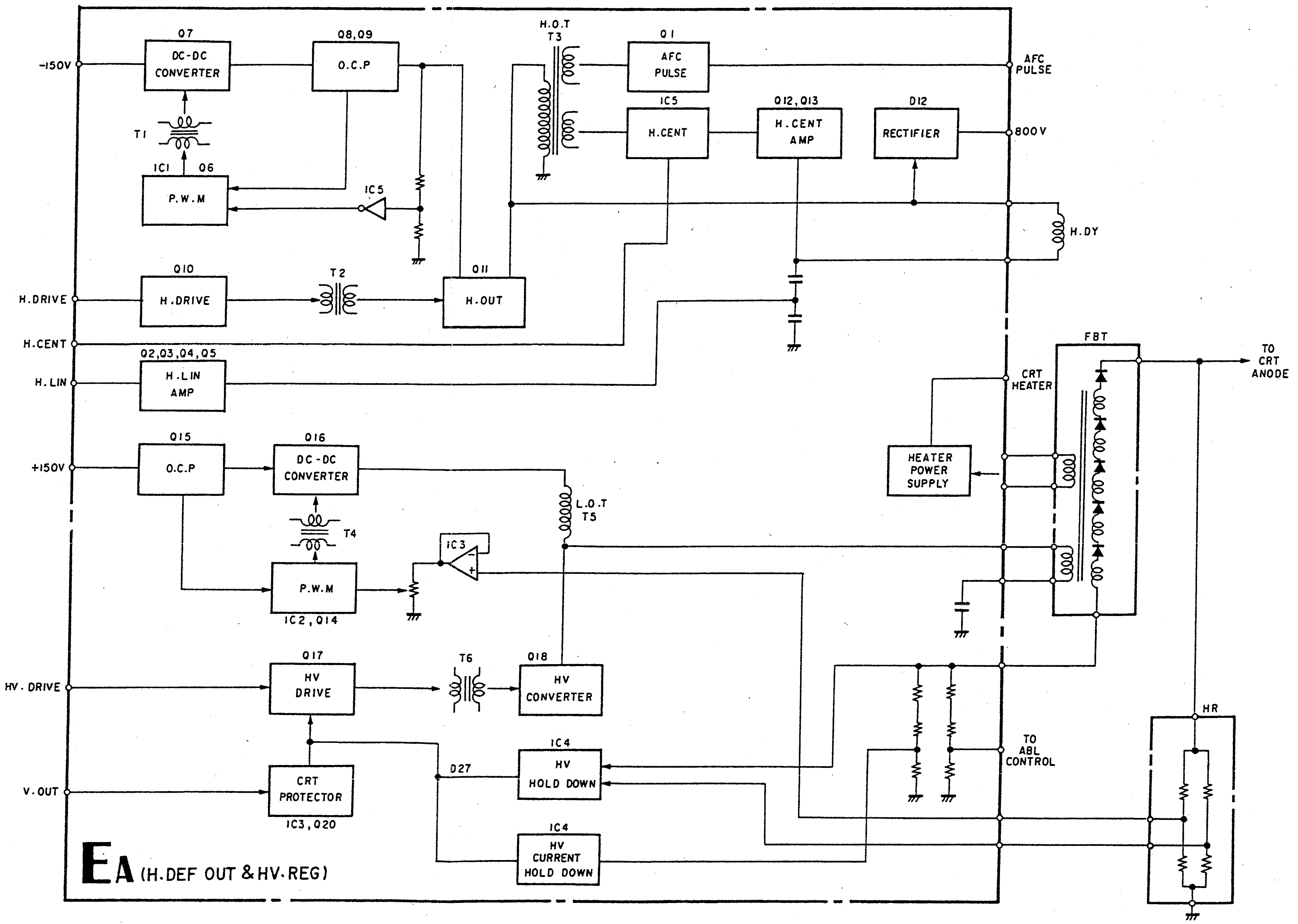
The anode current is converted to the voltage by resistor R121 (EA board) in which the current flows in the secondary winding of FBT.
For the high voltage current protector, when the anode current increases extraordinarily, the output of comparator IC4 (2/2) becomes high and the drive pulse of the high voltage converter is cut off by making D27 (SCR) gate on. Consequently, the high voltage output circuit is stopped.

3-15-7. CRT Protector

The CRT protector circuit is to prevent the CRT from burning when the vertical deflection circuit is stopped by some causes.
For the CRT protector circuit, because the retrance pulse of V out disappears when the vertical deflection circuit is stopped, Q20 is turned off and the output of comparator IC3 (2/2) becomes high, then, with D27 (SCR) turned on to cut off the drive pulse of the high voltage converter circuit, the high voltage output circuit is stopped.

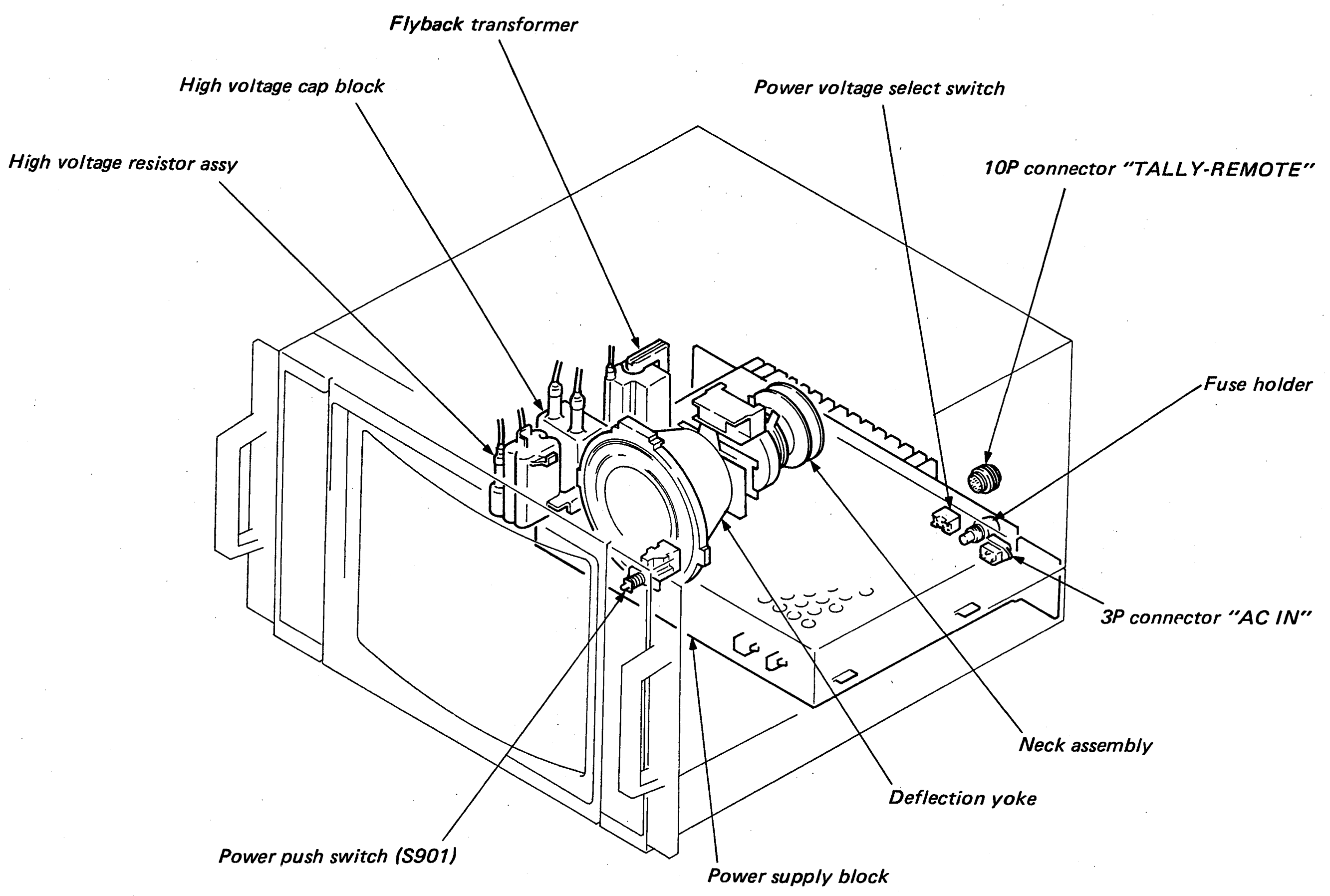
3-15-8. CRT Heater Power Source

The CRT heater power source is supplied from the secondary winding of FBT.

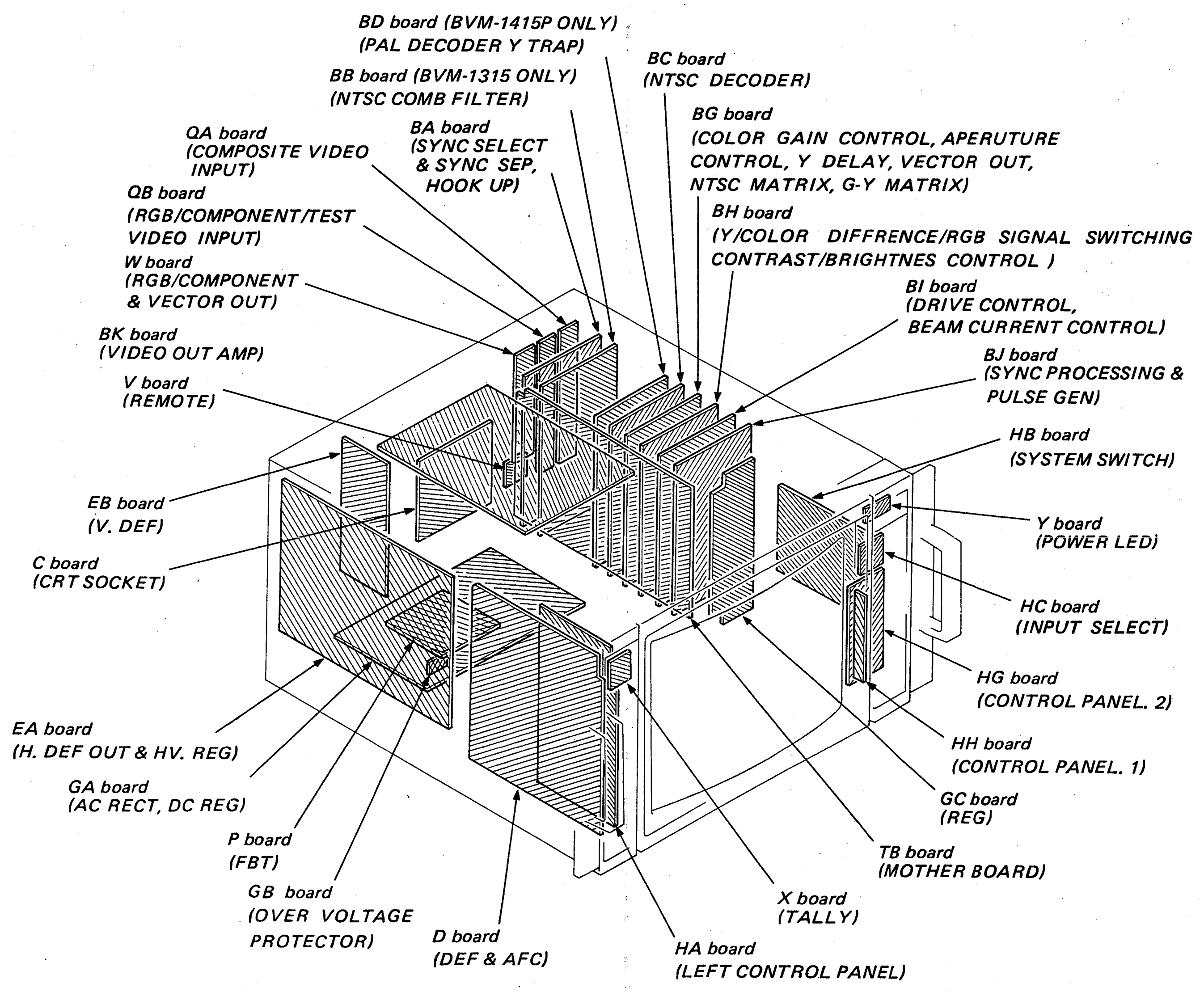


SECTION 4
ADJUSTMENTS

4-1. INTERNAL VIEW


Flyback transformer
High voltage cap block
Power voltage select switch
High voltage resistor assy
10P connector "TALLY-REMOTE"
Fuse holder
3P connector "AC IN"
Neck assembly
Deflection yoke
Power push switch (S901)
Power supply block

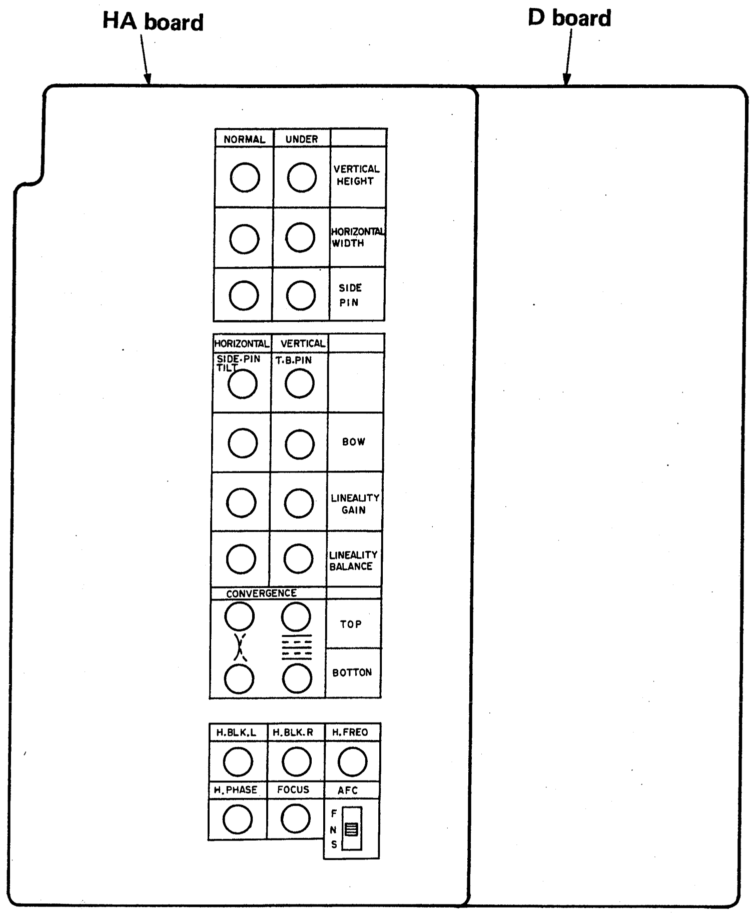
4-2. CIRCUIT BOARDS LOCATION

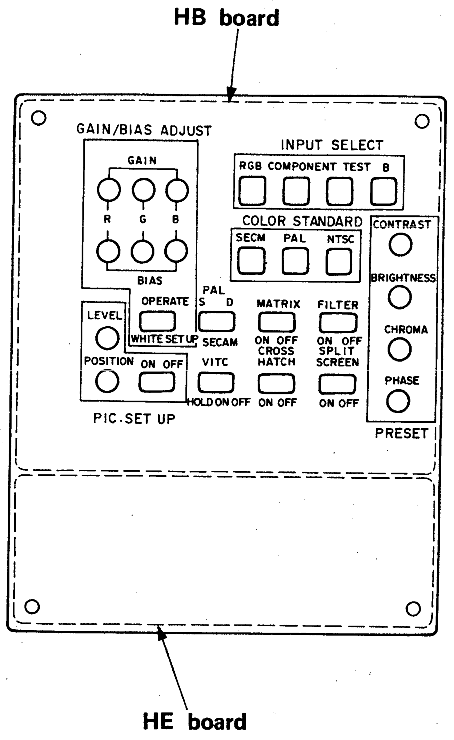

BD board (BVM-1415P ONLY)
(PAL DECODER Y TRAP)
BC board
(NTSC DECODER)
BB board (BVM-1315 ONLY)
(NTSC COMB FILTER)
BG board
(COLOR GAIN CONTROL, APERUTURE CONTROL, Y DELAY, VECTOR OUT, NTSC MATRIX, G-Y MATRIX)
QA board
(COMPOSITE VIDEO INPUT)
BA board
(SYNC SELECT & SYNC SEP, HOOK UP)
QB board
(RGB/COMPONENT/TEST VIDEO INPUT)
BH board
(Y/COLOR DIFFRENCE/RGB SIGNAL SWITCHING CONTRAST/BRIGHTNES CONTROL)
W board
(RGB/COMPONENT & VECTOR OUT)
BI board
(DRIVE CONTROL, BEAM CURRENT CONTROL)
BK board
(VIDEO OUT AMP)
BJ board
(SYNC PROCESSING & PULSE GEN)
V board
(REMOTE)
HB board
(SYSTEM SWITCH)
EB board
(V. DEF)
Y board
(POWER LED)
C board
(CRT SOCKET)
HC board
(INPUT SELECT)
HG board
(CONTROL PANEL. 2)
EA board
(H. DEF OUT & HV. REG)
HH board
(CONTROL PANEL. 1)
GA board
(AC RECT, DC REG)
GC board
(REG)
P board
(FBT)
TB board
(MOTHER BOARD)
GB board
(OVER VOLTAGE PROTECTOR)
X board
(TALLY)
D board
(DEF & AFC)
HA board
(LEFT CONTROL PANEL)

4-3. QUICK REFERENCE

SECTION \ BOARD	BA	BB	BC	BG	BH	BI	BJ	BK	BD/BM	D	EA
CIRCUT DESCRIPTION	3-1	3-17	3-19	3-3	3-5	3-7 3-15	3-9	3-13 3-15	3-21 3-23	3-29	3-31
ADJUSTMENTS	4-21 4-25	4-47	4-31 4-35	4-21 4-27	4-21	4-16	4-19 4-30 4-44	4-45	4-55	4-70	4-14
BLOCK DIAGRAM	3-2	3-18	3-20	3-4	3-5	3-7	3-9	3-13	3-22 3-24	3-29	3-31
MOUNTING DIAGRAM	5-11	5-16	5-21	5-31	5-39	5-41	5-49	5-51	5-29	5-59	5-65
SCHEMATIC DIAGRAM	5-13	5-19	5-23	5-33	5-37	5-43	5-47	5-53	5-27	5-57	5-63
ELECTRICAL PARTS LIST	7-1	7-4	7-6	7-16	7-8	7-12	7-10	7-14	7-30	7-24	7-26
SECTION \ BOARD	**EB**	**GA**	**GB**	**C**	**P**	**HA**	**HB**	**HC**	**HG**	**HH**	**X**
CIRCUIT DESCRIPTION	3-25	3-27	3-27	–	–	–	–	–	–	–	–
ADJUSTMENTS	–	4-11	–	–	–	–	4-18 4-21	–	–	–	–
BLOCK DIAGRAM	3-25	3-28	3-28	–	3-36	–	–	–	–	–	–
MOUNTING DIAGRAM	5-67	5-71	5-73	5-67	5-67	5-75	5-74	5-76	5-76	5-76	5-76
SCHEMATIC DIAGRAM	5-64	5-69	5-70	5-64	5-64	5-78	5-77	5-77	5-77	5-77	5-78
ELECTRICAL PARTS LIST	7-23	7-19	7-22	7-22	7-18	7-28	7-28	7-28	7-29	7-29	7-29
SECTION \ BOARD	**Y**	**GC**	**QA**	**V**	**W**	**QB**	**TB**	**Z**	**HE**		
CIRCUIT DESCRIPTION	–	–	3-1	–	–	3-1	–	–	–		
ADJUSTMENTS	–	–	–	–	–	–	–	–	–		
BLOCK DIAGRAM	–	–	3-2	–	–	3-2	–	–	–		
MOUNTING DIAGRAM	5-76	5-81	5-81	5-82	5-81	5-81	5-85	5-87	–		
SCHEMATIC DIAGRAM	5-78	5-79	5-79	5-80	5-80	5-80	5-83	–	–		
ELECTRICAL PARTS LIST	7-29	7-19	7-19	7-23	7-28	7-19	7-1	7-29	7-28		

4-4. SUB CONTROL PANEL LOCATION


HA board
D board
NORMAL
UNDER
VERTICAL HEIGHT
HORIZONTAL WIDTH
SIDE PIN
HORIZONTAL
VERTICAL
SIDE-PIN TILT
T.B.PIN
BOW
LINEALITY GAIN
LINEALITY BALANCE
CONVERGENCE
TOP
BOTTON
H.BLK.L
H.BLK.R
H.FREQ
H.PHASE
FOCUS
AFC
F
N
S


HB board
GAIN/BIAS ADJUST
GAIN
R
G
B
BIAS
INPUT SELECT
RGB COMPONENT TEST B
COLOR STANDARD
SECM PAL NTSC
CONTRAST
BRIGHTNESS
CHROMA
PHASE
PRESET
LEVEL
POSITION
ON OFF
OPERATE
WHITE SET UP
PAL
S D
SECAM
VITC
HOLD ON OFF
MATRIX
ON OFF
CROSS HATCH
ON OFF
FILTER
ON OFF
SPLIT SCREEN
ON OFF
PIC.SET UP
HE board

4-5. SETUP ADJUSTMENT IN CASE OF PICTURE TUBE REPLACEMENT

When the picture tube has been replaced, make the following adjustments. Convergence and white balance are normally adjusted by POT's on the sub control panel.
(Refer to pages 4-6, 4-7 and 4-9)

[Jigs Tools and Measurement Equipment Required]

1. SIGNAL GENERATOR (TEKTRONIX 1410 Series)
2. COLOR ANALYZER
3. LUMINANCE METER

[Landing adjustment]

1. Connect signal generator and receive a white signal.
2. Set BRIGHTNESS and CONTRAST MANUAL switch to preset (⊓).
3. Face the CRT screen toward East (or West) and press the DEGAUSS switch.
4. Adjust the purity adjusting screw in the center.

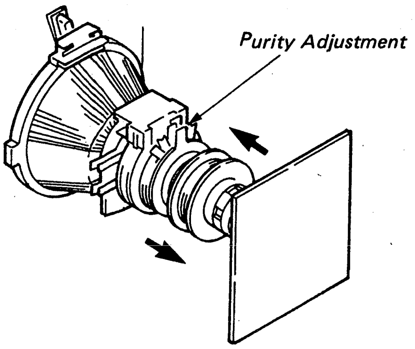


Fig. 1-1.

5. Slide DY (Deflection Yoke) as far forward as possible.
6. Set the neck assembly in the position shown in Fig. 1-2.

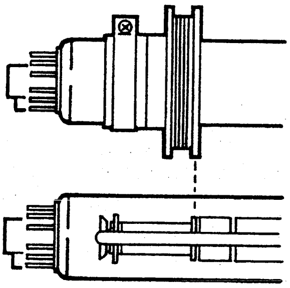
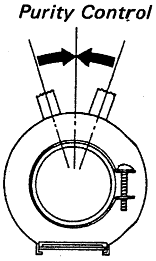


Fig. 1-2.

7. Set the screen to green only (R and B on the FRONT PANEL (L)) are in the IN position and G in the OUT position).
8. Adjust the purity magnet so that the center of screen becomes green as shown in Fig. 1-3.



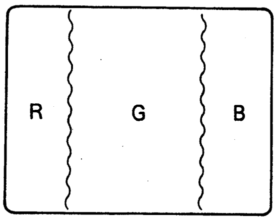


Fig. 1-3.

9. Slide DY back for uniform green raster.
10. Make the screen red only (G and B on the FRONT PANEL (L)) are in the IN position and R in the OUT position) and check landing.
11. Make the screen blue only (R and G on the FRONT PANEL (L)) are in the IN position and B in the OUT position) and check landing.
12. Adjust DY tilt and tighten DY set-screw.
13. Secure the DY with the spacers. (Fig. 1-4)

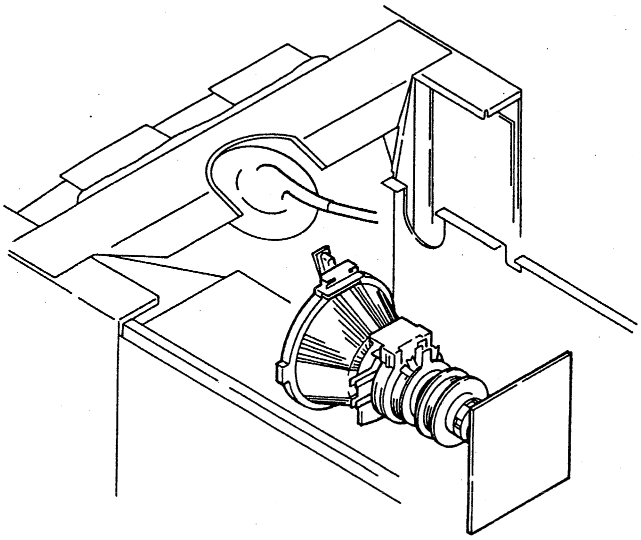
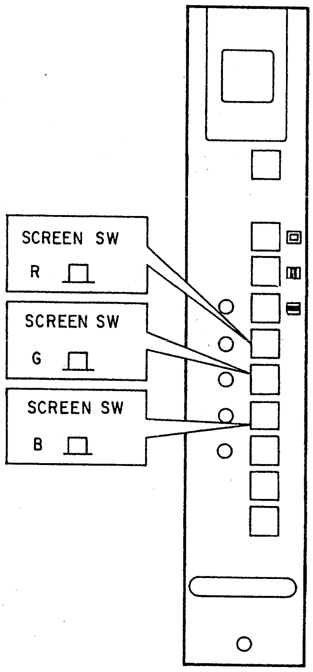


Fig. 1-4.

- **Final check**
  After adjustments, check that there is no mislanding by facing the CRT towards East, West, North and South directions.

FRONT PANEL (L)



[Convergence adjustment]

Preparation:

1. Connect the signal generator to receive the dot signal and crosshatch signal.
2. Adjust with CONTRAST and BRIGHTNESS controls to set to easy-to-monitor position those signals.
3. Set H.STATIC VR (RV17) on D0 Board to the mechanical center as shown in Fig. 1-5.

(1) Horizontal and Vertical Static Convergence

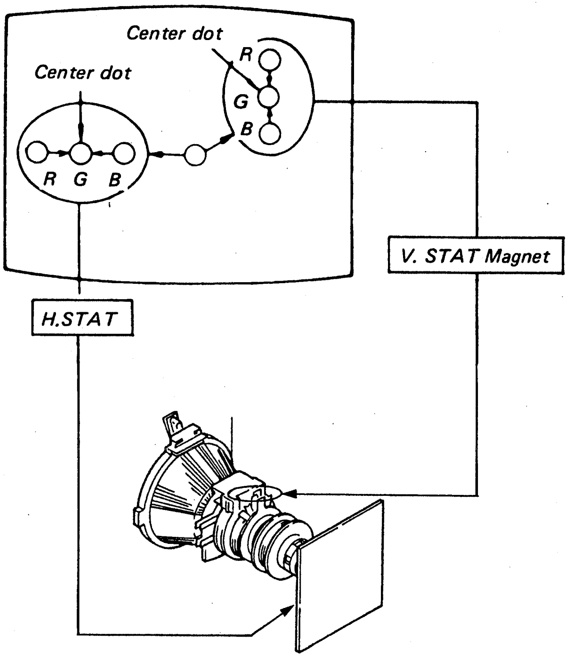
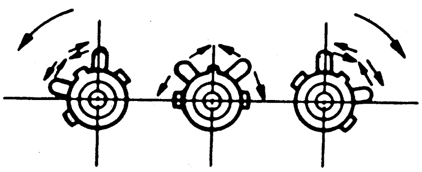


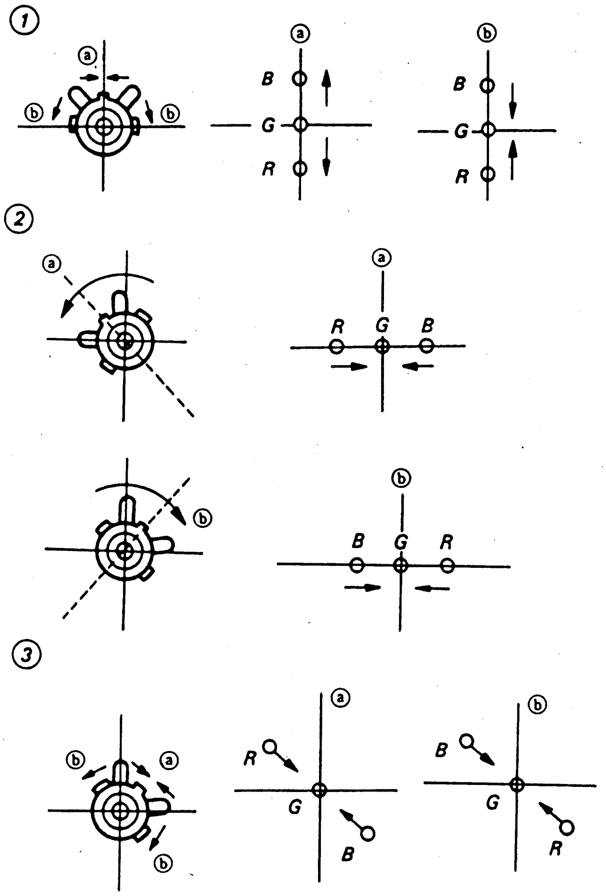
Fig. 1-5

1. Adjust H. STAT VR to coincide red, green and blue dots on the center of screen (Horizontal movement)
2. Adjust V. STAT magnet to coincide red, green and blue dots on the center of screen (Vertical movement)
3. If the red, green and blue dots do not coincide on the center of screen with H. STAT VR, perform horizontal convergence adjustment using H. STAT VR and V. STAT magnet as shown below. (In this case, H. STAT VR and V. STAT magnet effect each other.)

- Tilt the V. STAT magnet and adjust static convergence to open or close the V. STAT magnet.



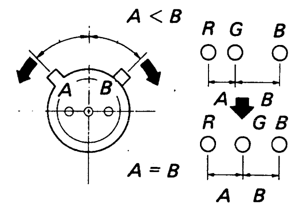
4. When the V. STAT magnet is moved in the direction of aroow ⓐ and ⓑ, Red, Green and Blue dots move as shown below.



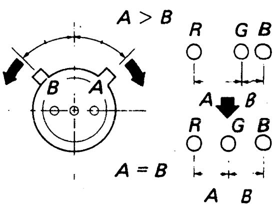
- **HMC and VMC correction for Hexapole Magnet.**

1. HMC (Horizontal, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.

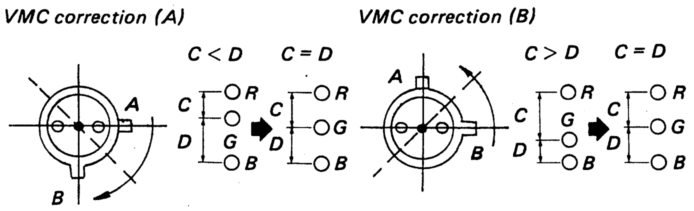
HMC correction (A)

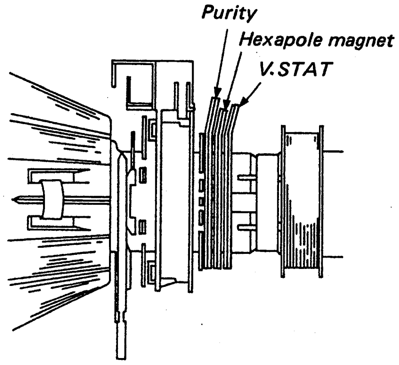


HMC correction (B)



2. VMC (Vertical, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.


VMC correction (A)
VMC correction (B)
C < D
C = D
C > D
C = D
A
B
C
D
R
G
B


Purity
Hexapole magnet
V.STAT

(2) Dynamic Convergence Adjustment

Preparation:

- Before starting, perform Horizontal and Vertical Static Convergence Adjustment.

1. Loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown in Fig. 1-6.
4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.

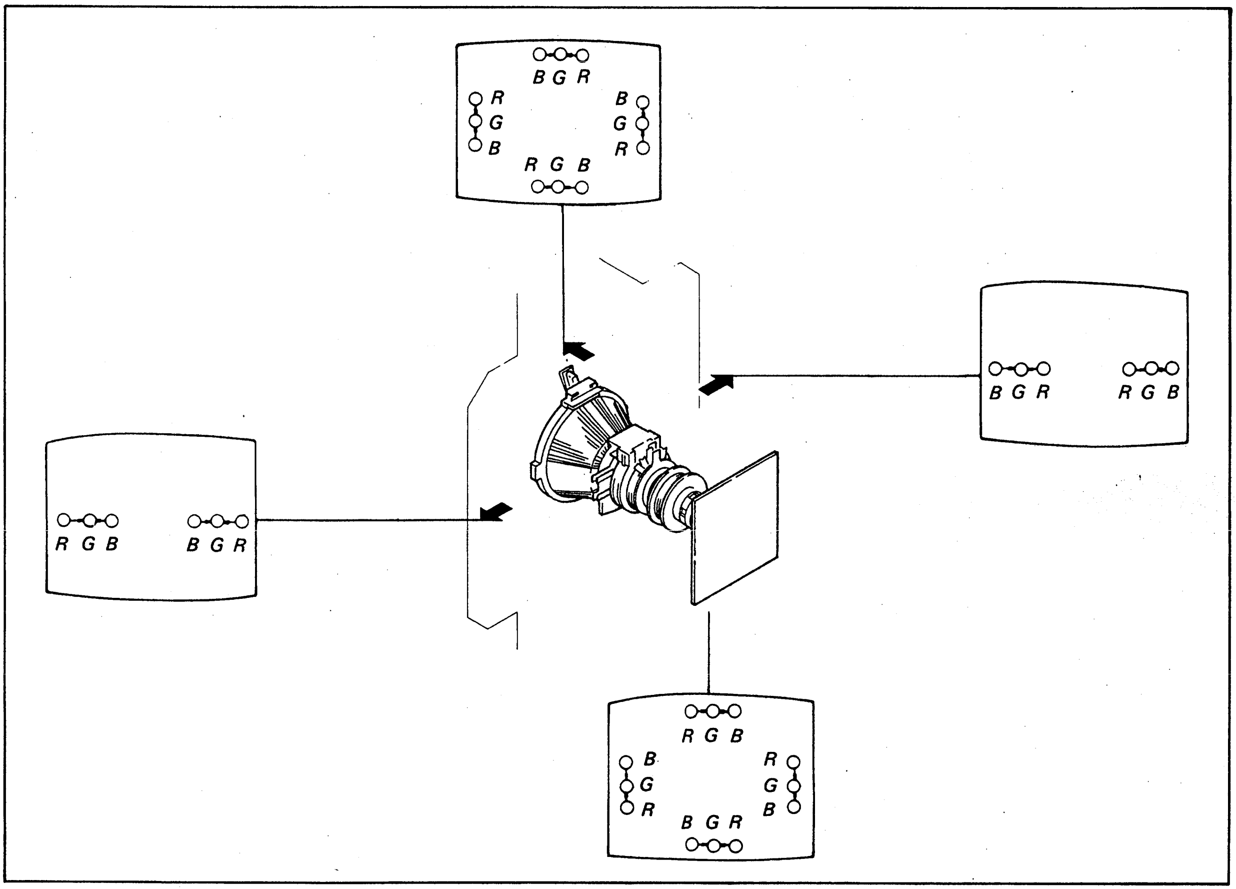
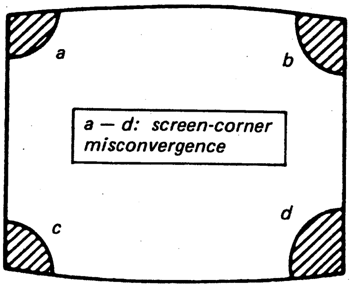
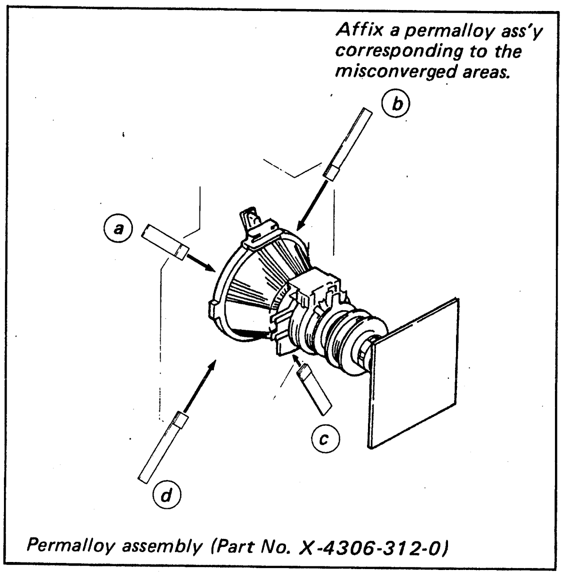

B G R
R G B
R
G
B
B
G
R
B G R
R G B
R G B
B G R
R G B
B G R
B
G
R
R
G
B

Fig. 1-6

(3) Screen-corner Convergence




Affix a permalloy ass'y corresponding to the misconverged areas.

Permalloy assembly (Part No. X-4306-312-0)

[CONVERGENCE PROCESS]

- D board adjustment, i.e., convergence adjustment should be performed after the completion of CFD CRT basic adjustment (tilt, etc.). At this time, set RV15, 16, 17, 18, 19 and 20 on the D board to mid-range.

1. UNDER SCAN switch .... NOR (□)

1. Adjust the vertical static convergence with V.STAT (RV20) at the left side of control panel as shown in left of Fig. 1-7.

2. Adjust the horizontal static convergence with H.STAT (RV17) at the left side of control panel as shown in right of Fig. 1-7.

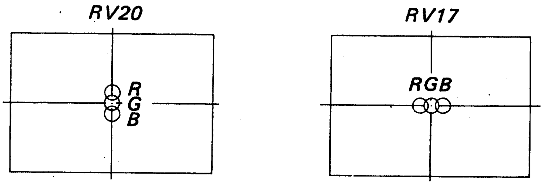


Fig. 1-7

3. Adjust the vertical convergence with X.C.T (RV18) on the D board as shown in left upper corner of Fig. 1-8.

4. Adjust the vertical convergence with X.C.B (RV19) on the D board as shown in left lower corner of Fig. 1-8.

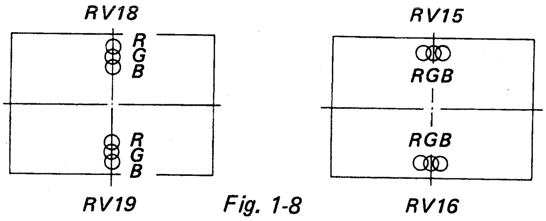


Fig. 1-8

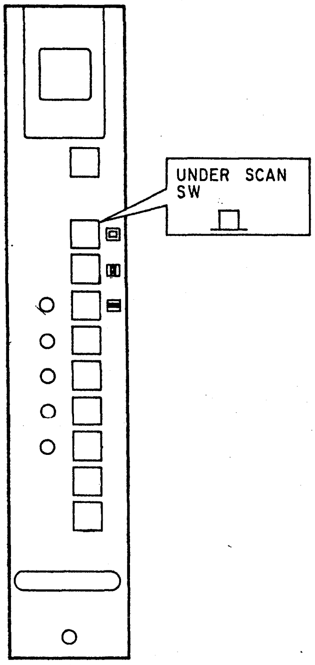
5. Adjust the horizontal convergence with Y.C.T (RV15) on the D board as shown in right upper corner of Fig. 1-8.

6. Adjust the horizontal convergence with Y.C.B (RV16) on the D board as shown in right upper corner of Fig. 1-8.

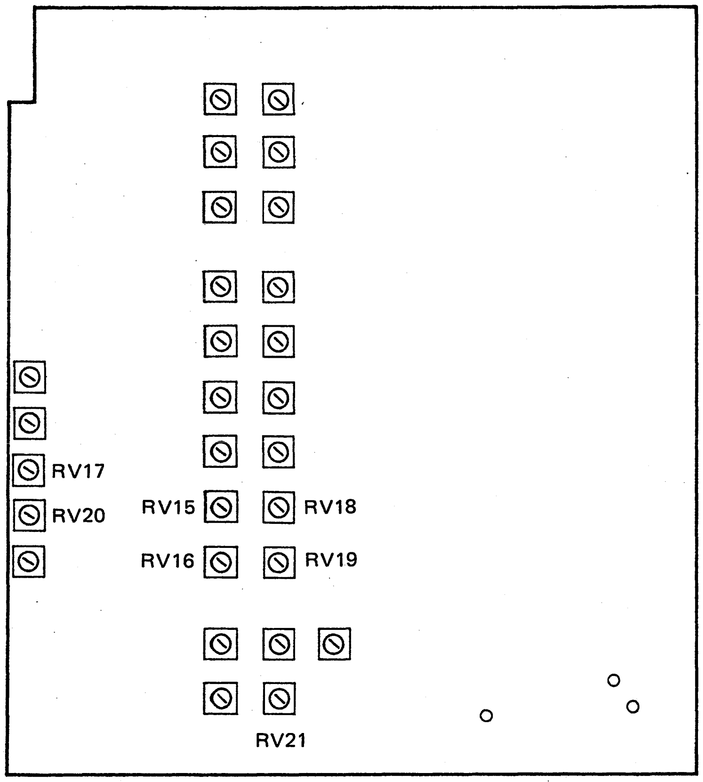
Focus adjustment

Turn FOCUS (RV21) on the D board so that the focus point at the center of picture is optimum.

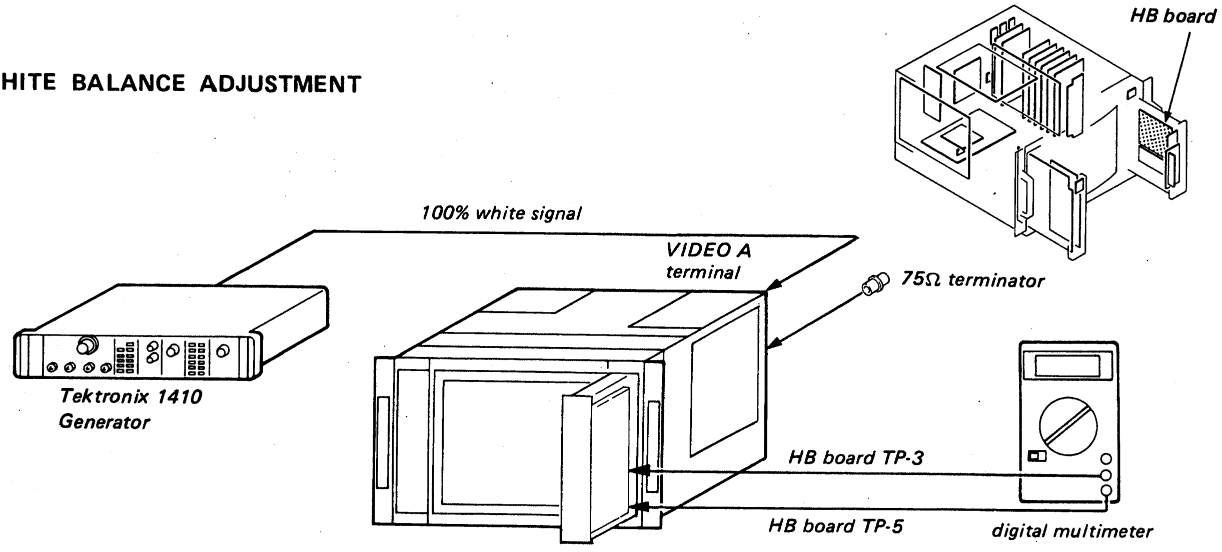
FRONT PANEL (L)


UNDER SCAN
SW

D board

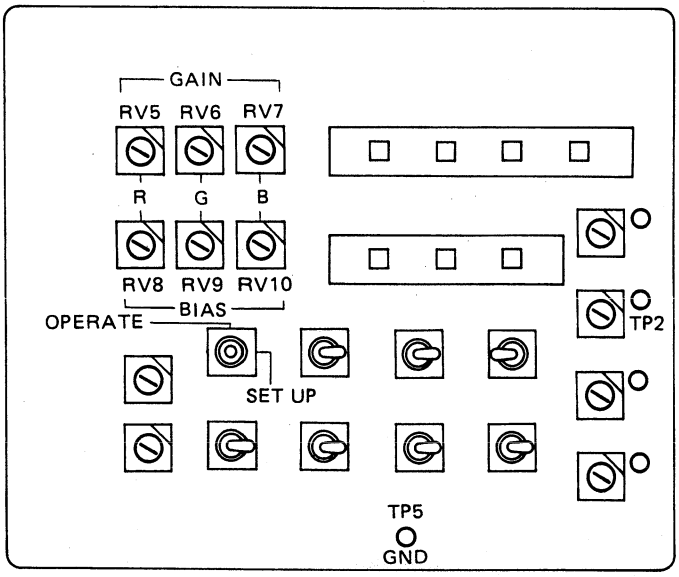

RV17
RV20
RV15
RV18
RV16
RV19
RV21

WHITE BALANCE ADJUSTMENT

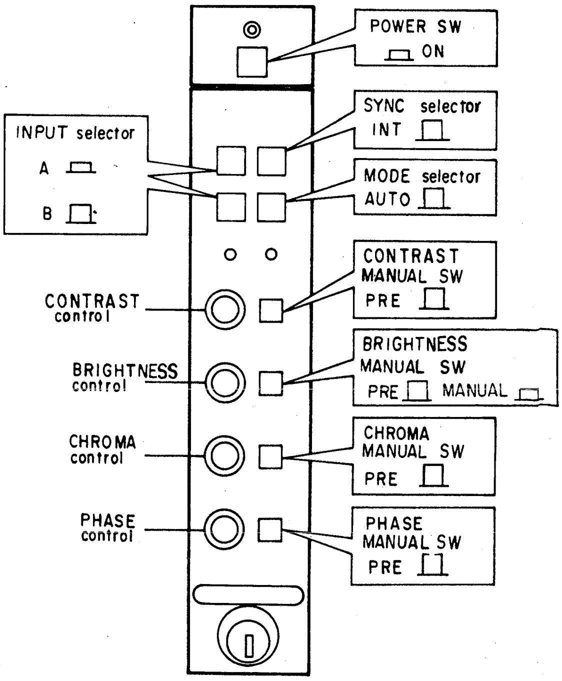

HB board
100% white signal
VIDEO A
terminal
75Ω terminator
Tektronix 1410
Generator
HB board TP-3
HB board TP-5
digital multimeter

1. Input 100% white signal to VIDEO A connector.
2. WHITE/OPERATE/SET UP switch . . . . .SET UP.
3. Connect digital multimeter across TP2 and TP5 (ground).
4. BRIGHTNESS MANUAL switch . . . . . MANUAL. (▭)
5. Adjust with BRIGHTNESS control so that the voltage of TP2 becomes –0.7 Vdc.
6. Turn BIAS controls (RV8:Red,RV9:Green,RV10:Blue)on the HB board to adjust the BRIGHTNESS to 0.5NIT and white balance using COLOR ANALYZER and check 0.5NIT by LUMINANCE METER.
7. BRIGHTNESS MANUAL switch . . . . PREET (⎍)
8. WHITE/OPERATE/SET UP switch . . . . OPERATE.
9. Turn GAIN controls (RV5: Red,RV6: Green, RV7:Blue) on the HB board to adjust the BRIGHTNESS at HIGH LIGHT to 103 NIT and white balance using COLOR ANALYZER and check 103 NIT by LUMINANCE METER.
10. Repeat procedure steps 4 to 9 if necessary.

HB board


GAIN
RV5
RV6
RV7
R
G
B
RV8
RV9
RV10
BIAS
OPERATE
SET UP
TP2
TP5
GND

FRONT PANEL (R)


POWER SW
ON
SYNC selector
INT
MODE selector
AUTO
INPUT selector
A
B
CONTRAST
MANUAL SW
PRE
CONTRAST
control
BRIGHTNESS
MANUAL SW
PRE
MANUAL
BRIGHTNESS
control
CHROMA
MANUAL SW
PRE
CHROMA
control
PHASE
MANUAL SW
PRE
PHASE
control

4-6. SAFETY RELATED ADJUSTMENTS

+B PROTECTOR (◪R52. R53)

When replacing the following components (marked ◪ on the schematic diagram), make this confirmation.

◪ GA Board . . R52, R53, Q14, Q13
GB Board . . D5, D6, R5, Q4, Q3, D7, R4, Q5, D8, R19, R20, R21, R22

It is necessary to use a digital multimeter for this confirmation.
Connect a digital multimeter to TP2 on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual bottom is out.)
2. Short-circuit R55 on GA Board.
3. Connect 100kΩ variable resistor with R68 in parallel on GA Board.
4. Confirm that the reading on the digital multimeter drops abruptly from +182.0V ~ +216.0V to 0V by turning the 100kΩ variable resistor so that the value of the resistor decrease from maximum value.
5. If step 4 isn't satisfied, check that the mounted components are correct.

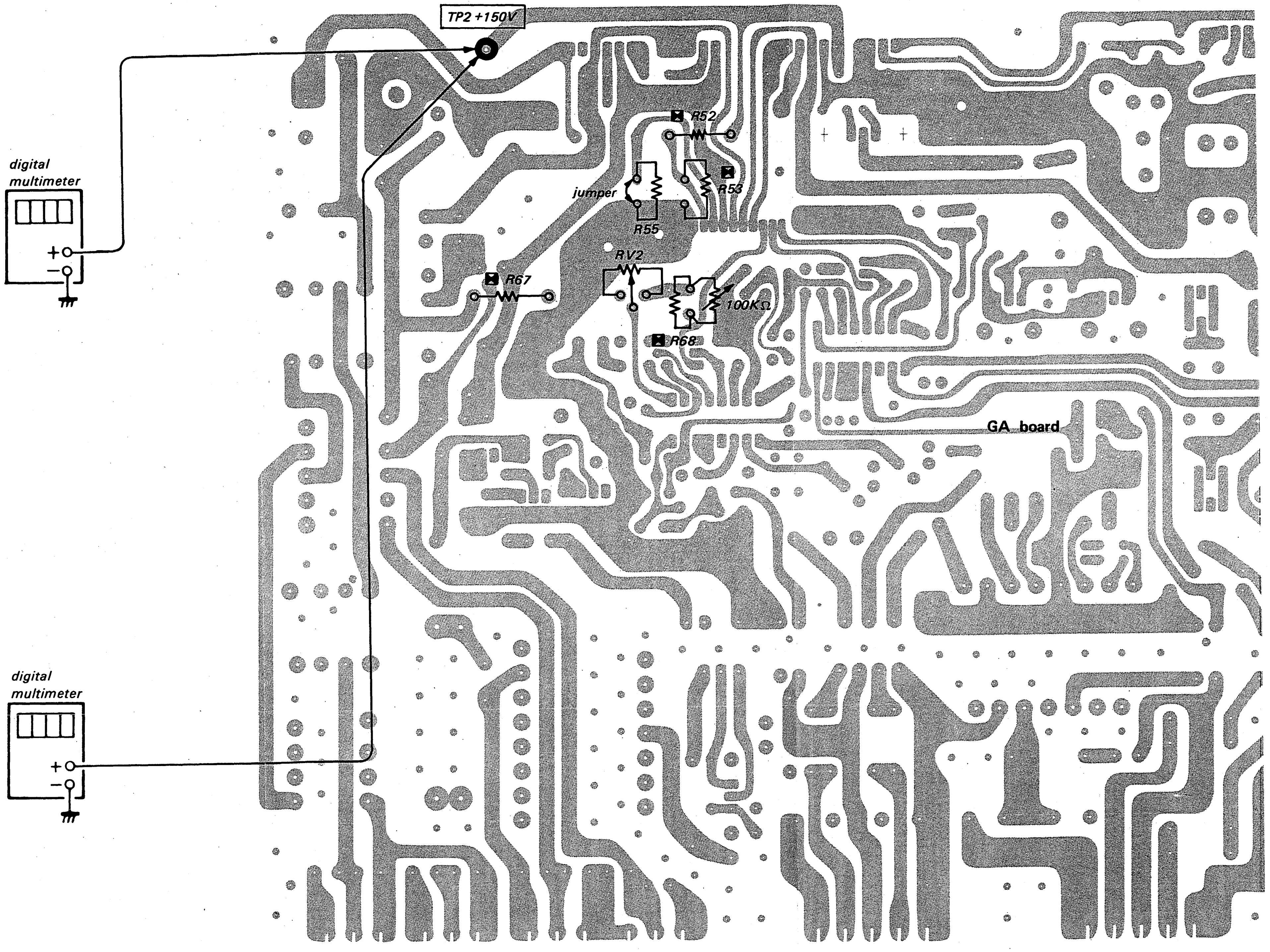
+B MAX CONFIRMATION (◪ R67. R68)

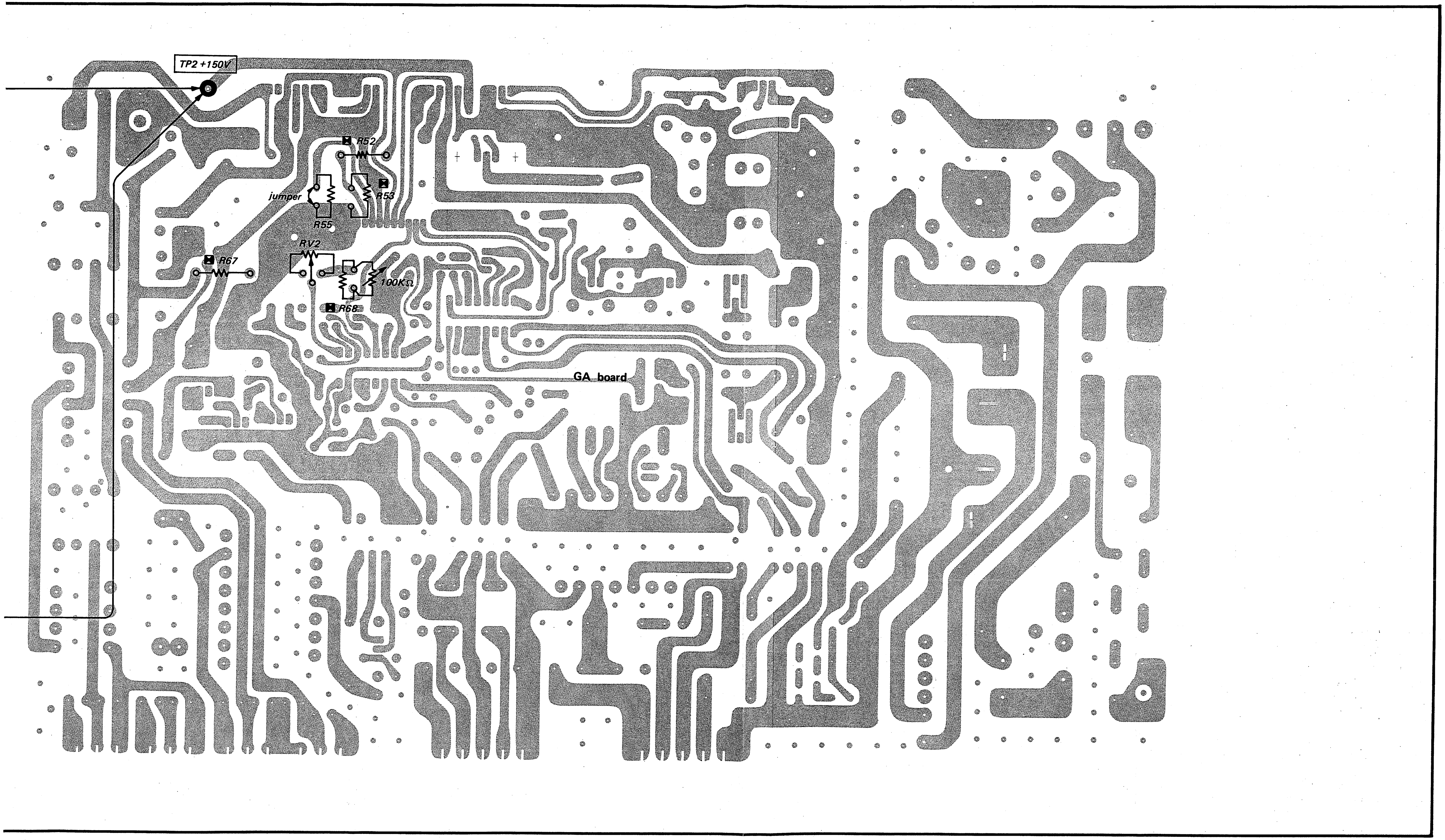
When replacing the following components (marked ◪ on the schematic diagram), make this confirmation.

◪ GA Board . . R67, RV2, R68, IC3, C59, R78

It is necessary to use a digital multimeter for this confirmation.
Connect a digital multimeter to TP2 on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual bottom is out.)
2. Confirm that the reading on the digital multimeter is between +155.0V and +175.0V when RV2 variable resistor is turned to fully clockwise.
3. After confirmation, make the reading on the digital multimeter into +150.0V ±0.5V by adjusting RV2 on GA Board.




TP2 +150V
R52
R53
jumper
R55
RV2
R67
100KΩ
R68
GA board

HIGH VOLTAGE HOLD DOWN ADJUSTMENT AND CONFIRMATION

(⊠ R106, R108)

When replacing the following components (marked ◩ on the schematic diagram), make this adjustment.

◩ HVR
◩ EA Board... IC4, D24, D25, D29, D27, R89, R90, R105, R107, R109, R110, R111, R102, R103

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.
Connect the DC current meter (3 mA range, accuracy of 1.0 class or more)
Even through an electrostatic voltmeter may not be used, connect digital multimeters to TP2, TP6 and TP5 (GND) on EA Board.

Note: Use an electrostatic voltmeter which is calibrated, and which has $2\times10^9\Omega$ or more input impedance.
example: ESH-27X or ESH-23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.

• In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to fully counterclockwise. (Manual button is IN ▭)
2. Connect 200 kΩ variable resistor with R75 in parallel on EA Board.
3. Confirm and memorize that the reading on the electrostatic voltmeter drops abruptly from 29.5 kV through 27.5 kV to 0V by turning slowly the 200 kΩ variable resistor so that the value of the resistor decrease from maximum value.
4. If step 3 is not satisfied, select the value of R106 and R108 (1/6W metal-film) and repeat above step 3.
5. Adjust so that the reading of current meter connected becomes 1000 μA by turning CONTRAST and BRIGHTNESS controls.
6. Confirm and memorize that the reading on the electrostatic voltmeter drops abruptly from 28.2 kV through 26.2 kV to 0V by turning slowly the 200 kΩ variable resistor and check the difference of memorized voltage between in steps 3 and 6 is over 1.15 kV.

• In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to fully counterclockwise. (Manual button is IN ▭)
2. Connect 200 kΩ variable resistor with R75 in parallel on EA BOARD.
3. Confirm that the reading on the digital multimeter of TP2 on EA Board is between 16.75V and 16.95V.
4. If step 3 is not satisfied, select the value of R106 and R108 (1/6W metal-film) and repeat above step 3.
5. Confirm that the reading on the digital multimeter at 7 pin of IC4 on EA Board drops abruptly from between 16.75V and 16.95V by turning slowly the 200 kΩ variable resistor from maximum value.
6. If step 5 is not satisfied, select the value of R106 and R108 (1/6W metal-film) and repeat above steps 3 through 5.
7. Adjust so that the reading of current meter connected becomes 1000 μA by turning CONTRAST and BRIGHTNESS controls.
8. Confirm that the reading on the digital multimeter at TP6 on EA Board drops abruptly from between 16.04V and 16.24V by turning slowly the 200 kΩ variable resistor so that the value of the resistor decrease from maximum value.
9. If step 8 is not satisfied, select the value of R106 and R108 (1/6W metal-film) and repeat above steps 3 through 6.)

HIGH VOLTAGE REGULATOR CONFIRMATION

(⊠ R72, R75)

When replacing the following components (marked ◩ on the schematic diagram), make this adjustment.

◩ HVR
◩ EA Board... R61, R62, R71, R73, R74, R88, RV1, IC2, IC3

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.
Even though an electrostatic voltmeter may not be used, connect digital multimeter to TP6 on EA Board.

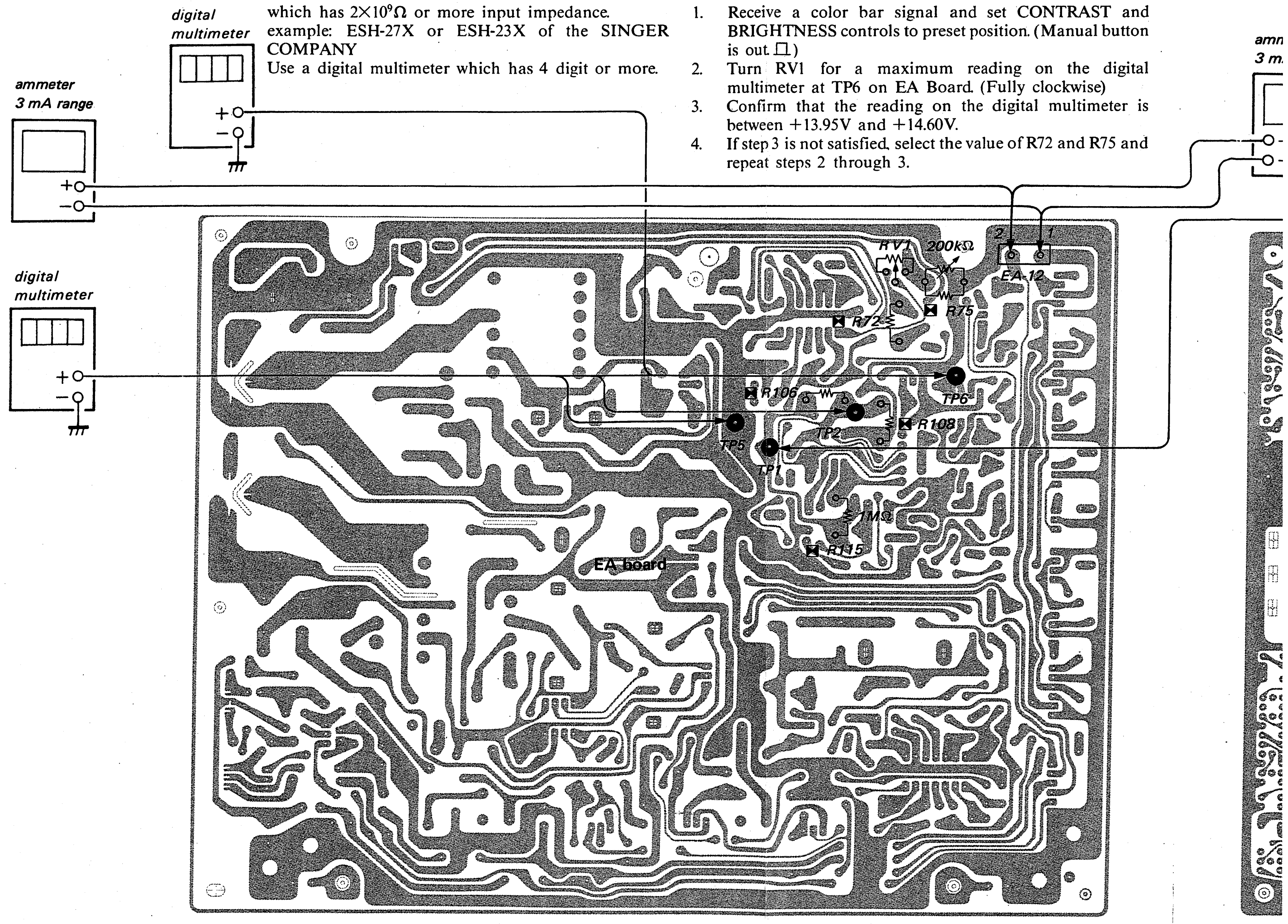
Note: Use an electrostatic voltmeter which is calibrated, and which has $2\times10^9\Omega$ or more input impedance.
example: ESH-27X or ESH-23X of the SINGER COMPANY
Use a digital multimeter which has 4 digit or more.

• In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out □)
2. Turn RV1 on EA Board for a maximum reading on the electrostatic voltmeter. (Fully clockwise)
3. Confirm that the reading on the electrostatic voltmeter is between 25.23 kV and 25.48 kV.
4. If step 3 is not satisfied, select the value of R72 and R75 and repeat above steps 2 through 3.
5. After confirmation, adjust RV1 for 25.0 kV±0.1 kV on the electrostatic voltmeter.

• In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out □)
2. Turn RV1 for a maximum reading on the digital multimeter at TP6 on EA Board. (Fully clockwise)
3. Confirm that the reading on the digital multimeter is between +13.95V and +14.60V.
4. If step 3 is not satisfied, select the value of R72 and R75 and repeat steps 2 through 3.



BEAM

(⊠ R115

When re
schemati
◩ EA B

P Board .

It is nece
confirma
Connect
Connect
1.0 class

HIGH VOLTAGE REGULATOR CONFIRMATION

(◪ R72, R75)

When replacing the following components (marked ◪ on the schematic diagram), make this adjustment.

◪ HVR
◪ EA Board... R61, R62, R71, R73, R74, R88, RV1, IC2, IC3

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.
Even though an electrostatic voltmeter may not be used, connect digital multimeter to TP6 on EA Board.

Note: Use an electrostatic voltmeter which is calibrated, and which has $2\times10^{9}\Omega$ or more input impedance.
example: ESH-27X or ESH-23X of the SINGER COMPANY
Use a digital multimeter which has 4 digit or more.

- **In case of using electrostatic voltmeter**

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out ☐)
2. Turn RV1 on EA Board for a maximum reading on the electrostatic voltmeter. (Fully clockwise)
3. Confirm that the reading on the electrostatic voltmeter is between 25.23 kV and 25.48 kV.
4. If step 3 is not satisfied, select the value of R72 and R75 and repeat above steps 2 through 3.
5. After confirmation, adjust RV1 for 25.0 kV±0.1 kV on the electrostatic voltmeter.

- **In case of using a digital multimeter**

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out ☐)
2. Turn RV1 for a maximum reading on the digital multimeter at TP6 on EA Board. (Fully clockwise)
3. Confirm that the reading on the digital multimeter is between +13.95V and +14.60V.
4. If step 3 is not satisfied, select the value of R72 and R75 and repeat steps 2 through 3.

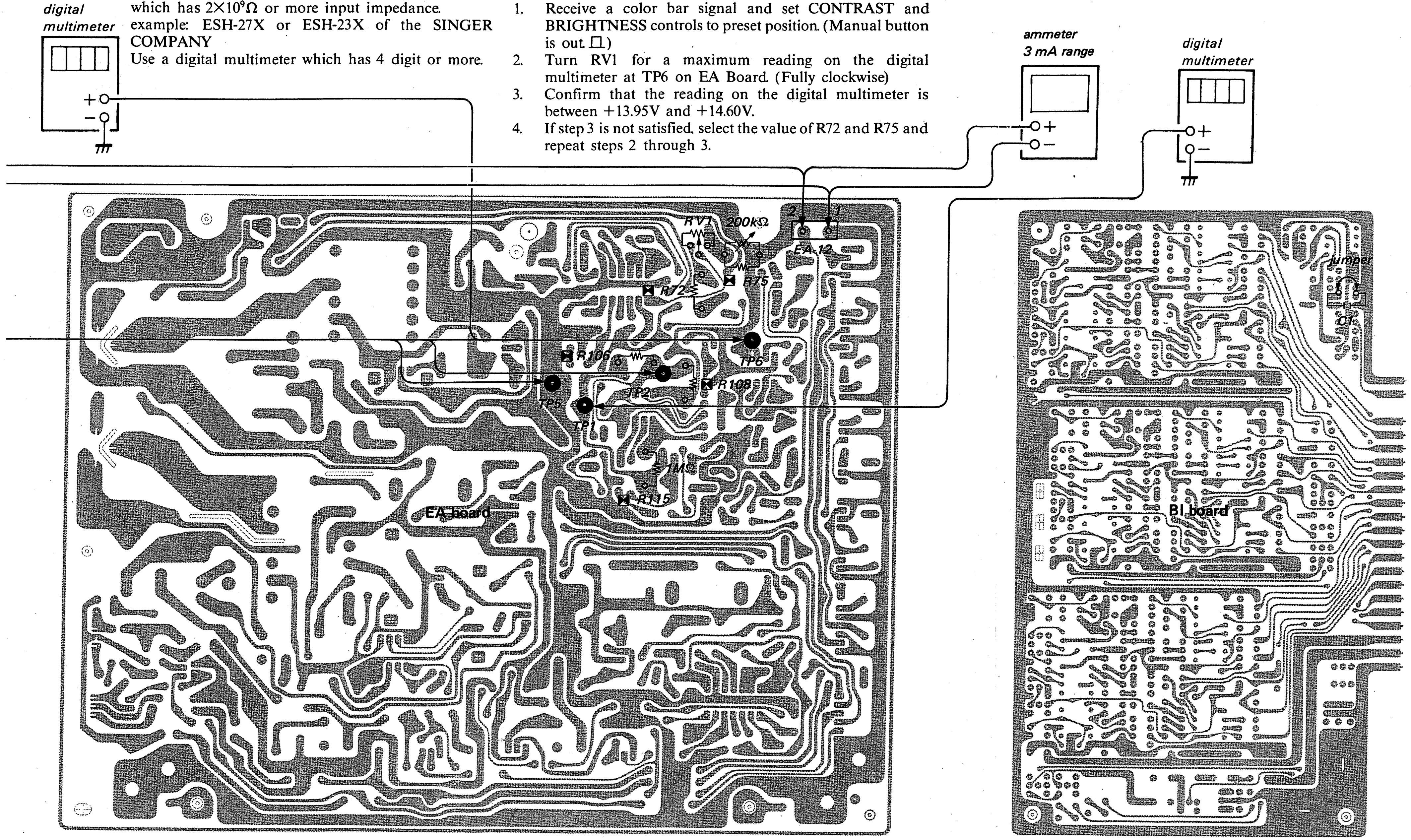
BEAM CURRENT PROTECTOR 1 CONFIRMATION

(◪ R115)

When replacing the following components (marked ◪ on the schematic diagram), make this confirmation.
◪ EA Board... IC4, D24, D26, D27, D29, R89, R90, R102, R103, R113, R114, R116, R117, R118, R119, R120, R121, R122, R123, R124, R112
P Board....... FBT

It is necessary to use a regulated digital multimeter for this confirmation.
Connect the digital multimeters to TP1 on EA Board.
Connect the current meter to EA-12. (3 mA Range, accuracy of 1.0 class or more)

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is IN ▭)
2. Confirm that the reading on the digital multimeter of TP1 on EA Board is between +31.0V and +33.5V.
3. If the reading on the digital multimeter of TP1 is more than +32.25V, 1 MΩ±1% 1/6W (metal-film) should be mounted at the portion R115 on EA Board. (Normally in this position R115 is not mounted.)
4. Shout-circuit C1 of BI Board.
5. Confirm that the picture disappears in the current meter's reading range of 1.33 mA to 1.97 mA while increasing the luminance by turning CONTRAST and BRIGHTNESS controls in MANUAL mode. (WHITE SW ON)
6. If step 5 is not satisfied, confirm whether the part mounted to R115 is correct.
7. Set BI Board (short-circuitted C1) and EA-12 to the original condition.



4-7. CIRCUIT ADJUSTMENTS

- To make the following adjustments, unless otherwise specified, the controls knobs and switches shall be preset as described below.

FRONT PANEL (R)

No.	Control	Setting	Board
1.	INPUT selector	A	HC board
2.	SYNC selector	INT	
3.	MODE selector	AUTO	
4.	CONTRAST MANUAL switch	PRESET	HG board
5.	BRIGHTNESS MANUAL switch	PRESET	
6.	CHROMA MANUAL switch	PRESET	
7.	PHASE MANUAL switch	PRESET	

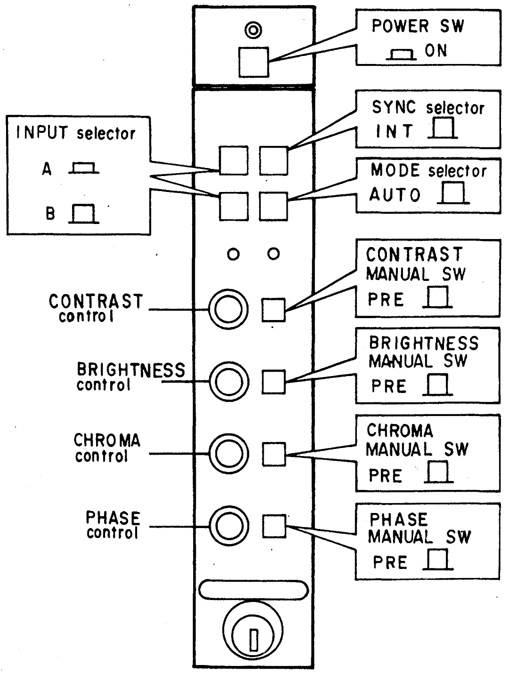
FRONT PANEL (L)

No.	Control	Setting	Board
8.	SCAN MODE switch		HA board
	▣ UNDER SCAN	NOR	
	◫ H. DELAY	NOR	
	▤ V. DELAY	NOR	
9.	SCREEN switch (R)	NOR	
10.	SCREEN switch (G)	NOR	
11.	SCREEN switch (B)	NOR	
12.	APT switch	NOR	
13.	BLUE ONLY switch	NOR	
14.	COMB/TRAP filter selector	TRAP	

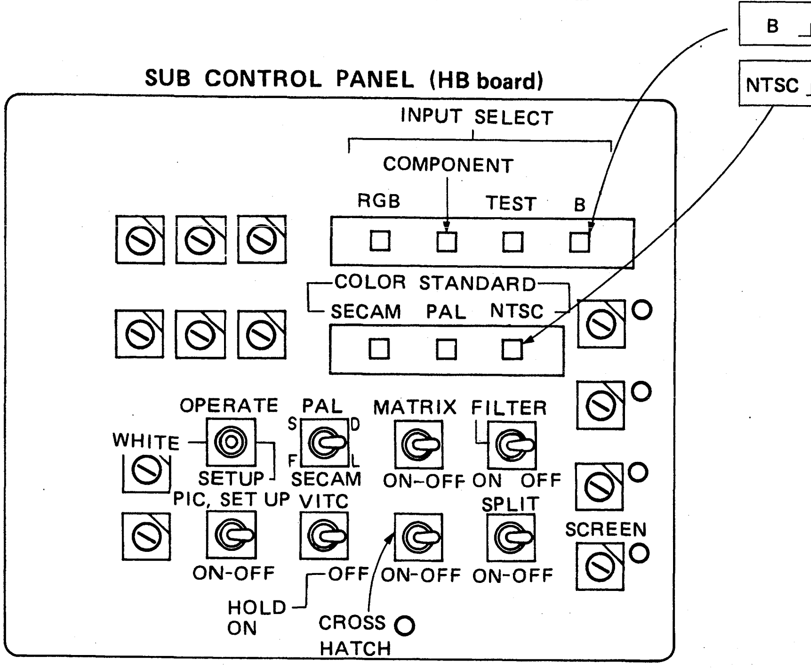
SUB CONTROL PANEL

No.	Control	Setting	Board
15.	INPUT SELECT buttons	B	HB board
16.	COLOR STANDARD buttons	NTSC	
17.	FILTER switch	OFF	
18.	MATRIX switch	OFF	
19.	PAL/SECAM mode selector	D(L)	
20.	WHITE/OPERATE/SET UP selector	OPERATE	
21.	SPLIT SCREEN switch	OFF	
22.	CROSS HATCH switch	OFF	
23.	VITC switch	OFF	
24.	PIC. SET UP switch	OFF	
25.	AFC switch	N	D board

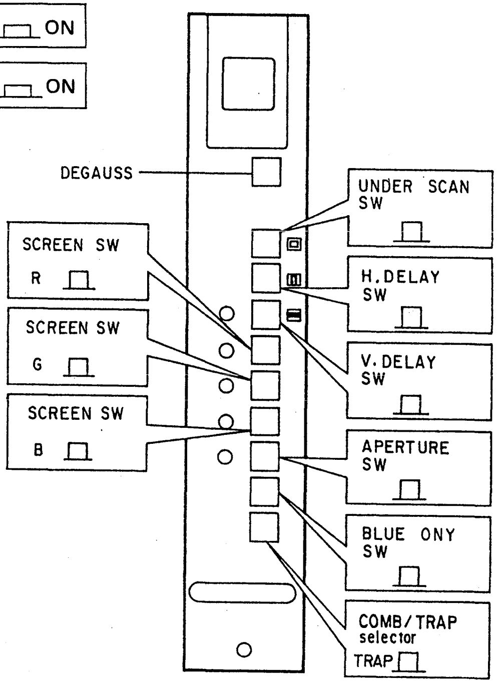
FRONT PANEL (R)


POWER SW
ON
SYNC selector
INT
MODE selector
AUTO
INPUT selector
A
B
CONTRAST MANUAL SW
PRE
CONTRAST control
BRIGHTNESS MANUAL SW
PRE
BRIGHTNESS control
CHROMA MANUAL SW
PRE
CHROMA control
PHASE MANUAL SW
PRE
PHASE control

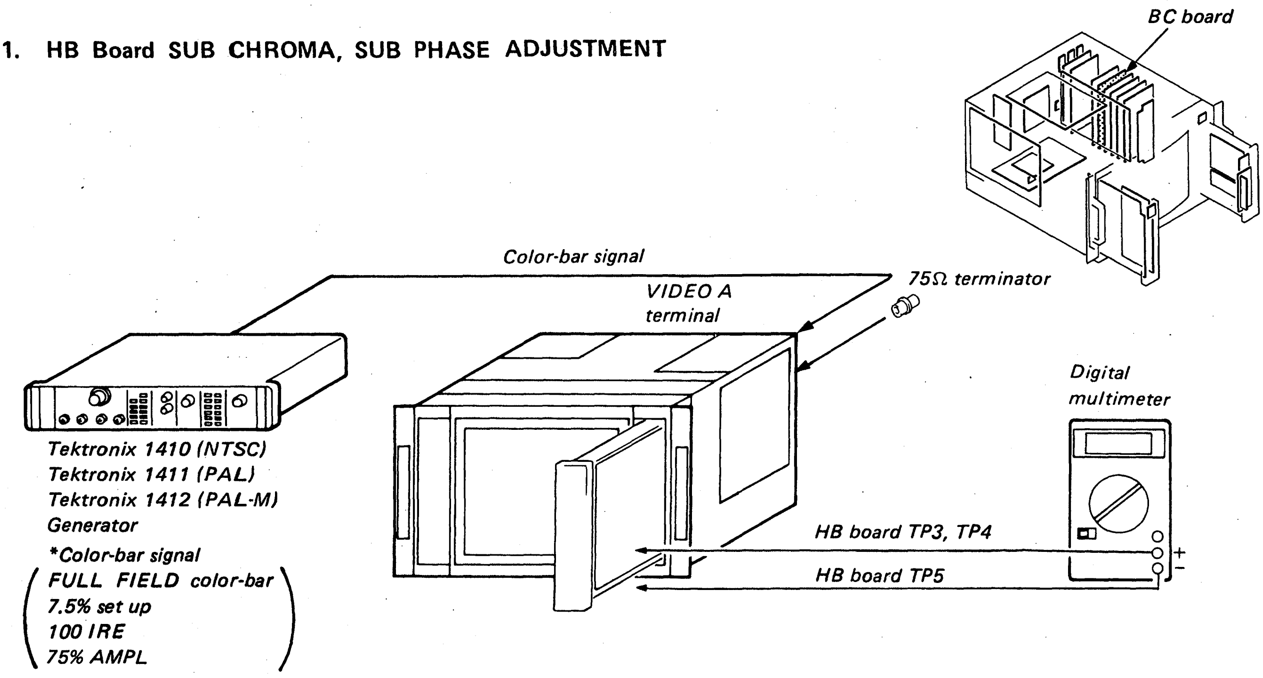
SUB CONTROL PANEL (HB board)


B ON
NTSC ON
INPUT SELECT
COMPONENT
RGB
TEST
B
COLOR STANDARD
SECAM
PAL
NTSC
OPERATE
WHITE
SETUP
PAL
S
D
F
L
SECAM
MATRIX
ON-OFF
FILTER
ON OFF
PIC. SET UP
ON-OFF
VITC
HOLD
ON
OFF
ON-OFF
CROSS HATCH
SPLIT
ON-OFF
SCREEN

FRONT PANEL (L)

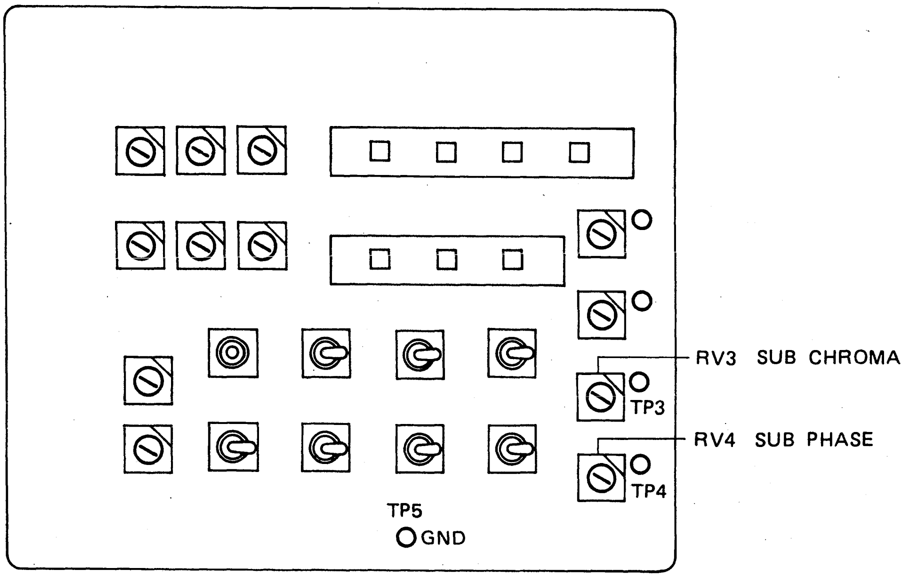

DEGAUSS
UNDER SCAN SW
H. DELAY SW
V. DELAY SW
APERTURE SW
BLUE ONY SW
COMB/TRAP selector
TRAP
SCREEN SW
R
SCREEN SW
G
SCREEN SW
B

1. HB Board SUB CHROMA, SUB PHASE ADJUSTMENT

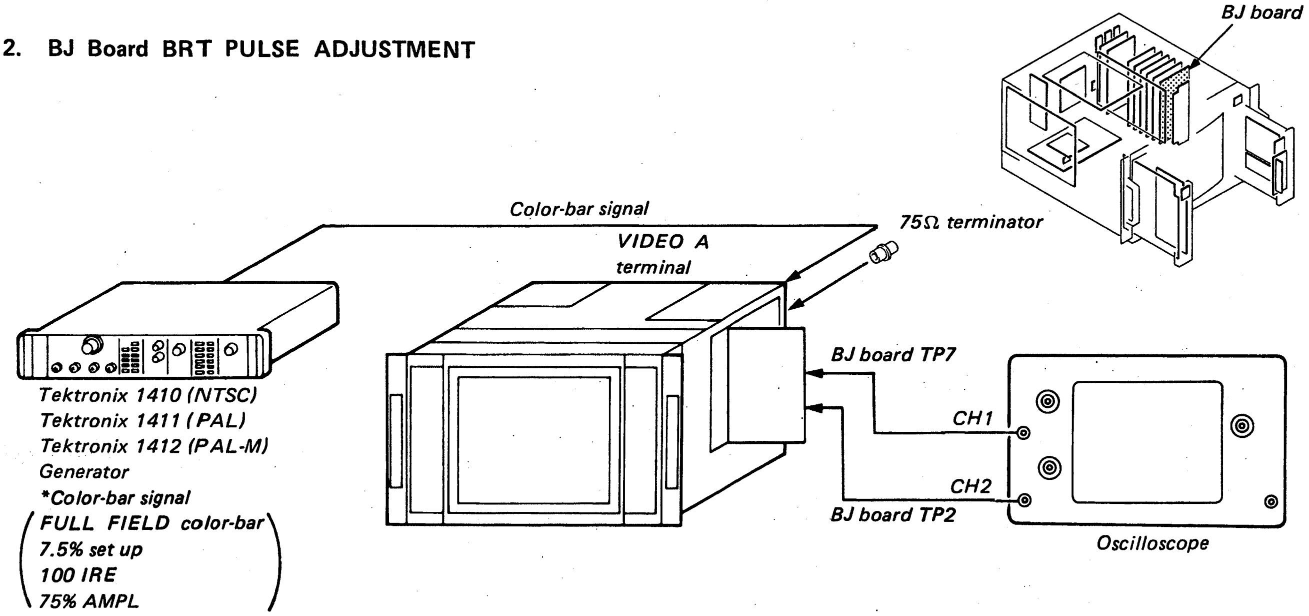

BC board
Color-bar signal
VIDEO A terminal
75Ω terminator
Digital multimeter
Tektronix 1410 (NTSC)
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
*Color-bar signal
FULL FIELD color-bar
7.5% set up
100 IRE
75% AMPL
HB board TP3, TP4
HB board TP5
+
−

1. Connect a digital multimeter to the TP3 of HB board and TP5 (ground).
2. Adjust to −5.5V DC with RV3. (SUB CHROMA)
3. Connect a digital multimeter to the TP4 of HB board and TP5.
4. Adjust to 0V DC with RV4. (SUB PHASE) of HB board.

HB board


RV3 SUB CHROMA
TP3
RV4 SUB PHASE
TP4
TP5
GND

2. BJ Board BRT PULSE ADJUSTMENT


BJ board
Color-bar signal
VIDEO A
terminal
75Ω terminator
BJ board TP7
CH1
CH2
BJ board TP2
Oscilloscope
Tektronix 1410 (NTSC)
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
*Color-bar signal
FULL FIELD color-bar
7.5% set up
100 IRE
75% AMPL

1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope (CH1 probe) to the TP7 of BJ board and oscilloscope (CH2 probe) to the TP2 of BJ board.
3. Adjust RV7 to obtain the waveform on the oscilloscope as shown in Fig. 2-1.

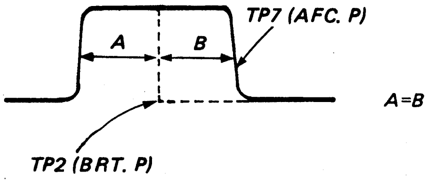
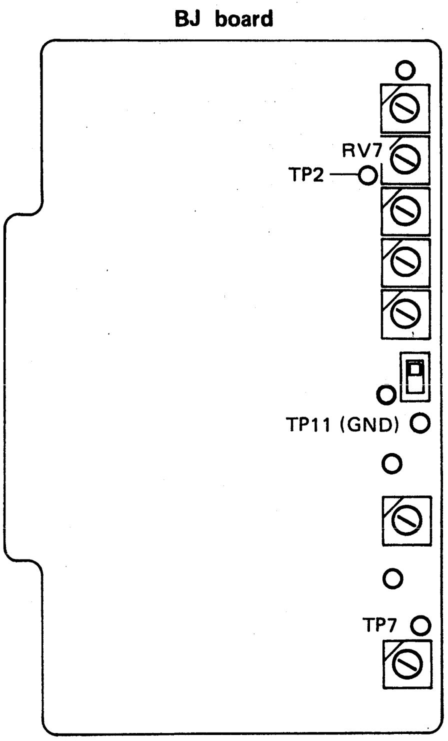
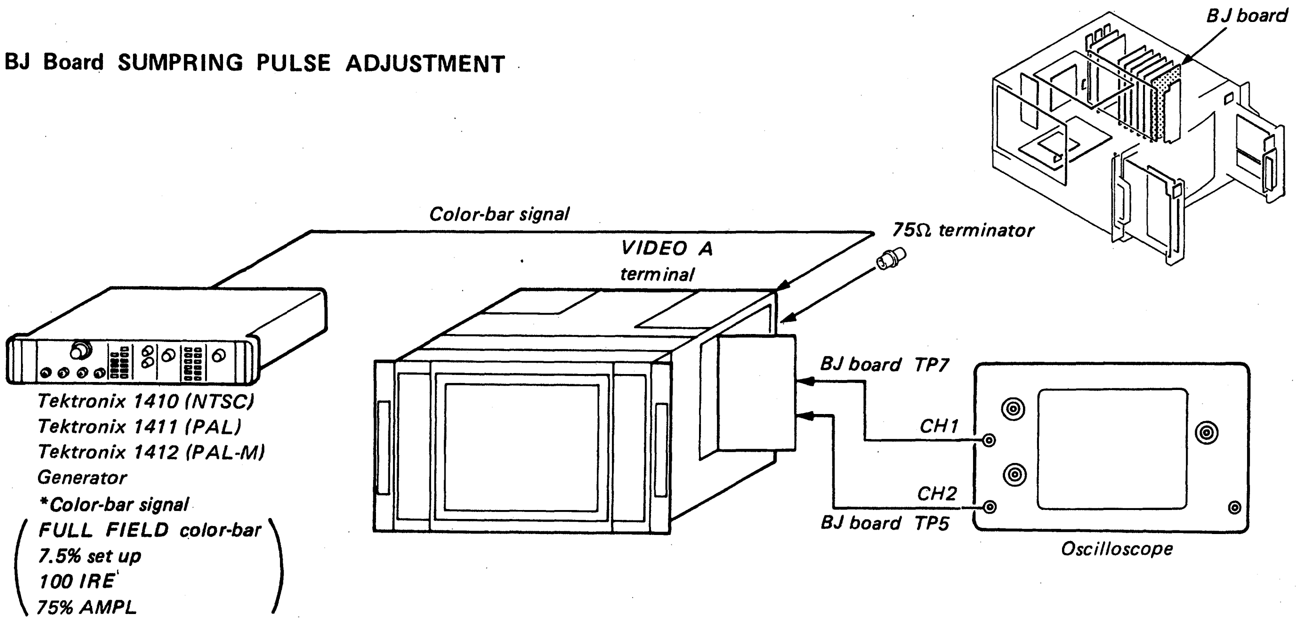

TP7 (AFC. P)
A
B
A=B
TP2 (BRT. P)

Fig. 2-1


BJ board
RV7
TP2
TP11 (GND)
TP7

BJ Board SUMPRING PULSE ADJUSTMENT


B J board
Color-bar signal
VIDEO A
terminal
75Ω terminator
BJ board TP7
CH1
CH2
BJ board TP5
Oscilloscope
Tektronix 1410 (NTSC)
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
*Color-bar signal
FULL FIELD color-bar
7.5% set up
100 IRE
75% AMPL

1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an osilloscope (CH 1 probe) to the TP7 of BJ board and Connect an oscilloscope (CH 2 probe) to the TP5 of BJ board.
3. Adjust RV5 to obtain the waveform on the oscilloscope as shown in Fig. 2-2.

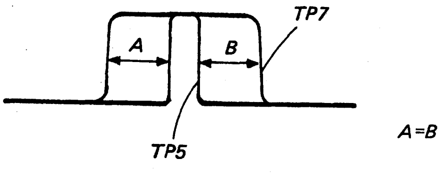
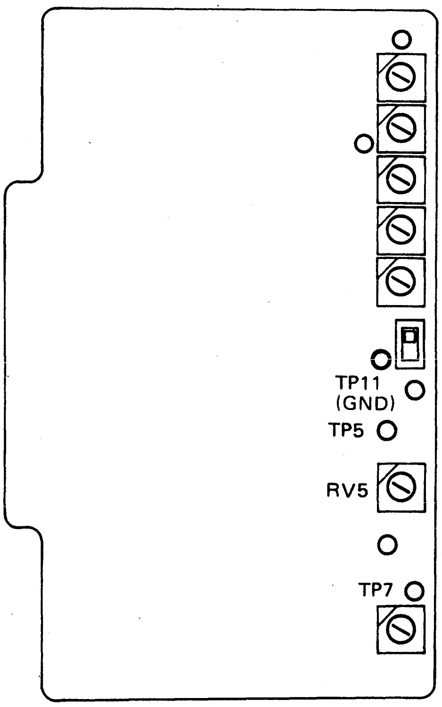
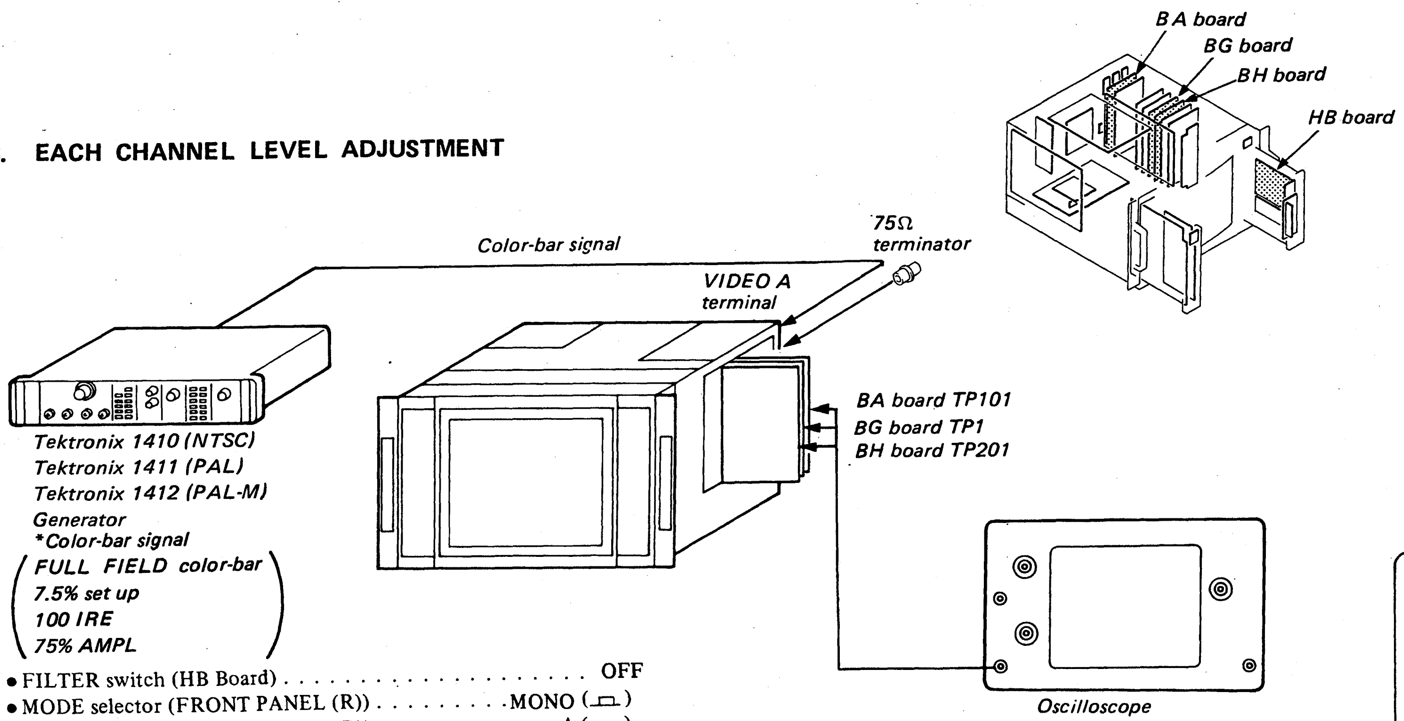

TP7
A
B
TP5
A=B

Fig. 2-2

BJ board


TP11
(GND)
TP5
RV5
TP7

3. EACH CHANNEL LEVEL ADJUSTMENT


BA board
BG board
BH board
HB board
75Ω terminator
Color-bar signal
VIDEO A terminal
BA board TP101
BG board TP1
BH board TP201
Tektronix 1410 (NTSC)
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
*Color-bar signal
FULL FIELD color-bar
7.5% set up
100 IRE
75% AMPL
Oscilloscope

- FILTER switch (HB Board) . . . . OFF
- MODE selector (FRONT PANEL (R)) . . . . MONO (⊓)
- INPUT selector (FRONT PANEL (R)) . . . . A (⊓)

BA board

1. Input a color-bar signal to VIDEO A terminal to the set.
2. Connect an oscilloscope to the TP101 of BA board.
3. Adjust to 1.0Vp-p with RV101 of BA board as shown in Fig. 3-1.

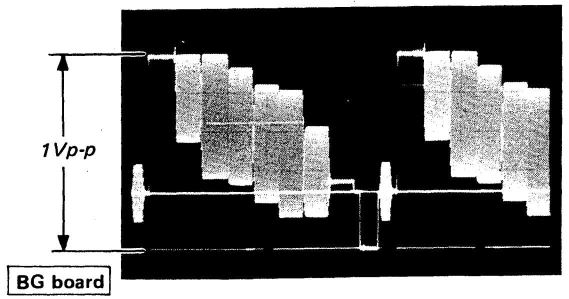


Fig. 3-1

BG board

4. Connect an oscilloscope to the TP1 of BG board.
5. Adjust to 1.0Vp-p with RV3 of BG board as shown in Fig. 3-1.
6. Connect an oscilloscope to the TP201 of BH board.

HB board

7. Adjust RV2 (SUB BRT) of HB board so that Ⓐ (black level) is 0V DC as shown in Fig. 3-2.
8. Adjust RV1 (SUB CONT) of HB board so that Ⓑ (100% white level) is –0.7V DC as shown in Fig. 3-2.

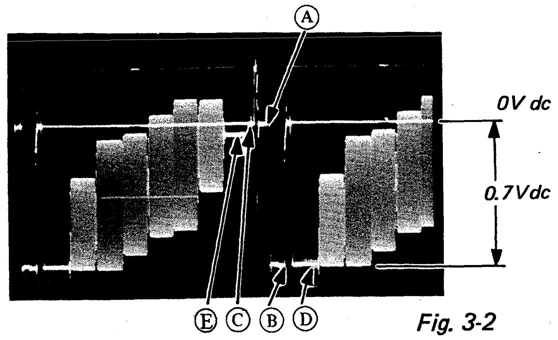


Fig. 3-2

Ⓐ . . . . . Black level
Ⓑ . . . . . 100% White level
Ⓒ . . . . . 0 IRE level
Ⓓ . . . . . 100 IRE level
Ⓔ . . . . . 7.5 IRE level

BH board

9. S2 (BH Board) . . . . 0 IRE
   Adjust RV1 of BH board so that the Ⓒ (0 IRE level) coincides with Ⓐ (Black level) as shown in Fig. 3-3.
10. Adjust RV3 of BH board so that the Ⓓ (100 IRE level) coincides with Ⓑ (100% white level) as shown in Fig. 3-3.

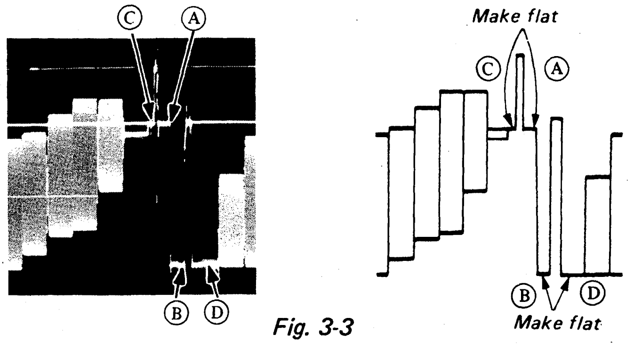


Fig. 3-3

BH board

11. S2 (BH Board) . . . . . 7.5 IRE
    Adjust RV2 of BH board so that the Ⓔ (7.5 IRE level) coincides with Ⓐ (Black level) as shown in Fig. 3-4.
12. Set S2 (BH Board) to 0 IRE.

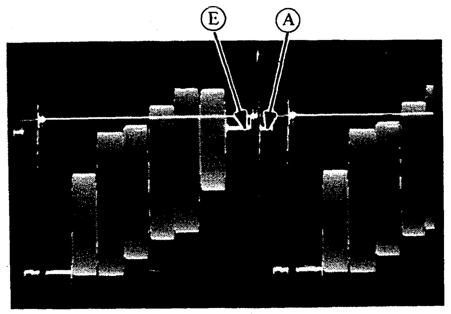
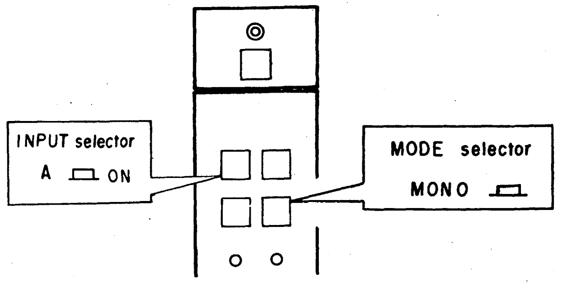
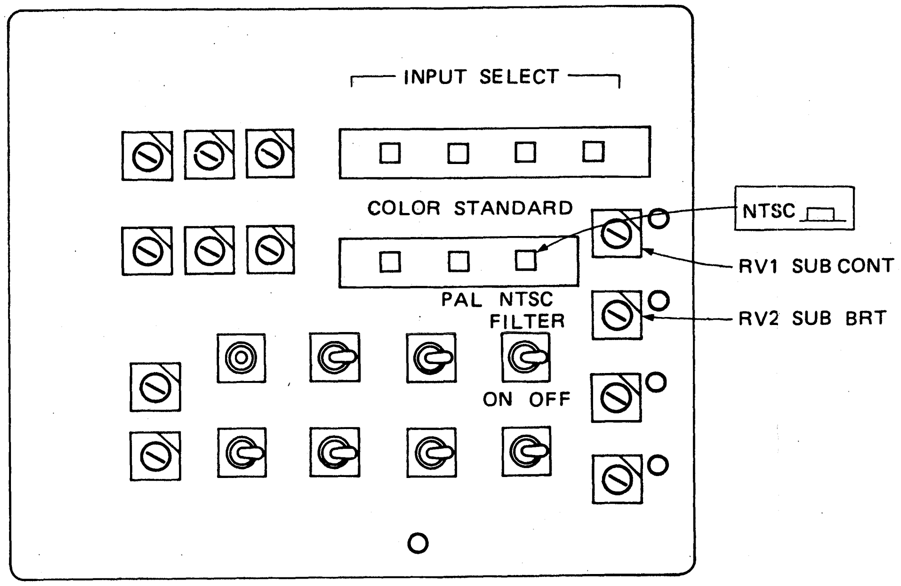


Fig. 3-4

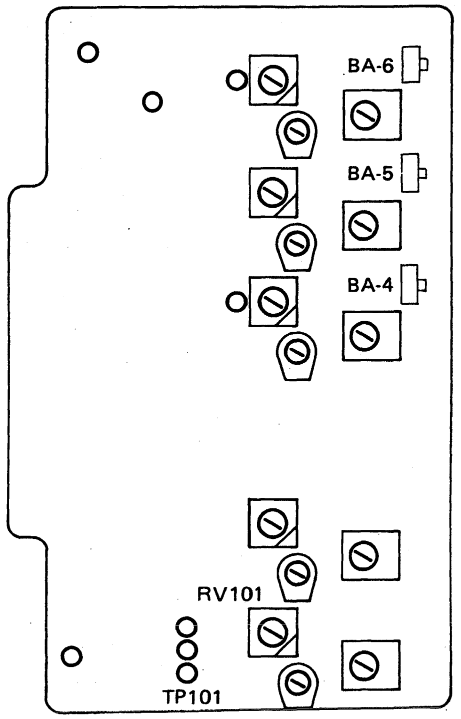
FRONT PANEL (R)


INPUT selector
A ⊓ ON
MODE selector
MONO ⊓

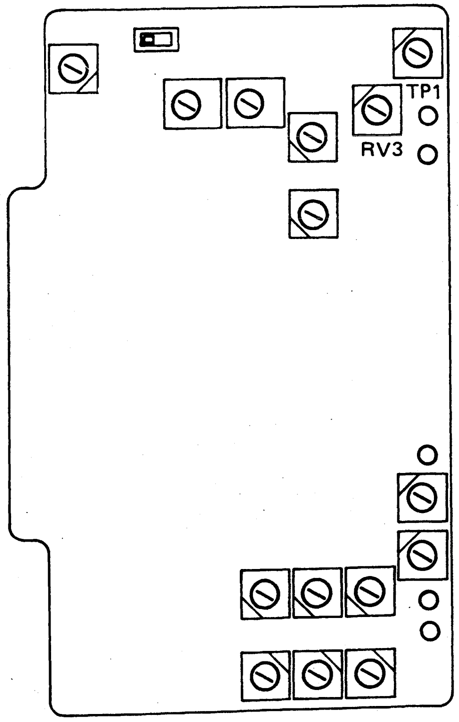
HB board


INPUT SELECT
COLOR STANDARD
PAL NTSC
FILTER
ON OFF
NTSC ⊓
RV1 SUB CONT
RV2 SUB BRT

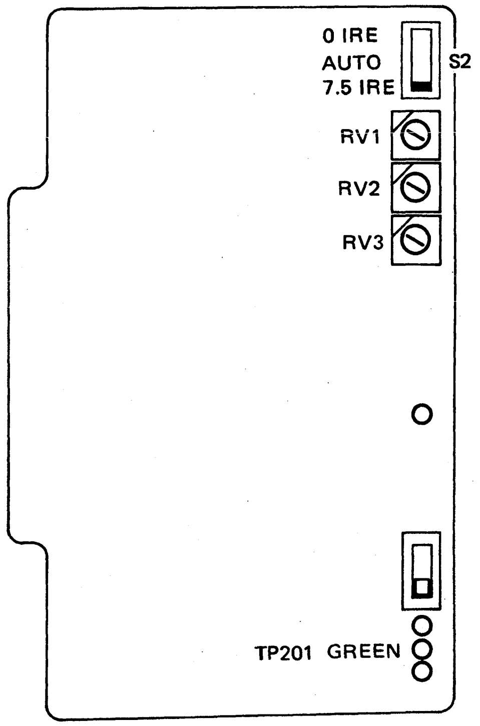
BA board

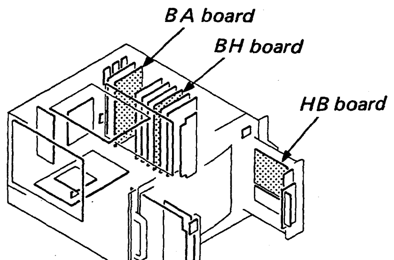

BA-6
BA-5
BA-4
RV101
TP101

BG board



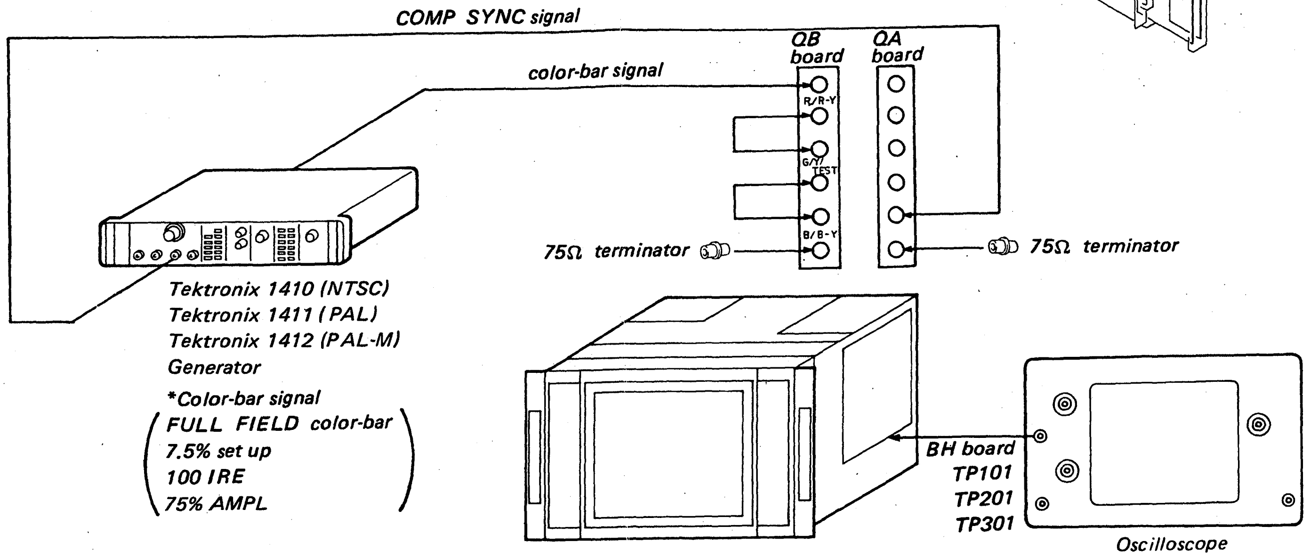
BH board


0 IRE
AUTO
7.5 IRE
S2
RV1
RV2
RV3
TP201 GREEN


BA board
BH board
HB board

BA board

13. Input a color-bar signal to VIDEO B terminal of the set.
    - INPUT selector (FRONT PANEL (R)) . . . . B (⊏⊐)
    - SYNC selector (FRONT PANEL (R)) . . . . EXT (⊏⊐)
    - INPUT SELECT buttons
      (SUB CONTROL PANEL (R)) . . . . RGB (⊏⊐)


COMP SYNC signal
color-bar signal
QB board
QA board
R/R-Y
G/Y/TEST
B/B-Y
75Ω terminator
75Ω terminator
Tektronix 1410 (NTSC)
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
*Color-bar signal
FULL FIELD color-bar
7.5% set up
100 IRE
75% AMPL
BH board
TP101
TP201
TP301
Oscilloscope

14. Connect an oscilloscope to TP101 of BH board.
15. Adjust RV401 of BA board so that the Ⓓ (100 IRE level) coincides with Ⓑ (100% white level) as shown in Fig. 3-5.
16. Connect an oscilloscope to TP201 of BH board.
17. Adjust RV501 of BA board so that the Ⓓ (100 IRE level) coincides with Ⓑ (100% white level) as shown in Fig. 3-5.
18. Connect an oscilloscope to TP101 of BH board.
19. Adjust RV601 of BA board so that the Ⓓ (100 IRE level) coincides with Ⓑ (100% white level) as shown in Fig. 3-5.

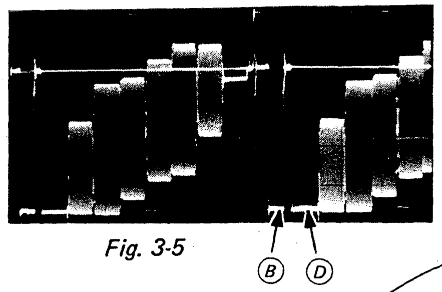
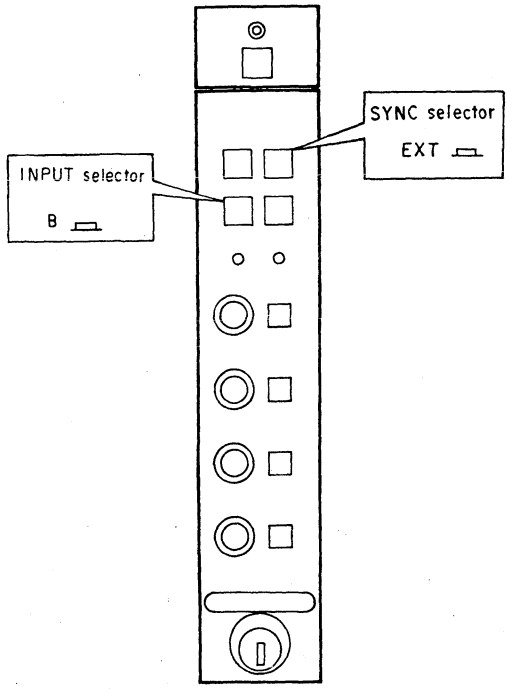
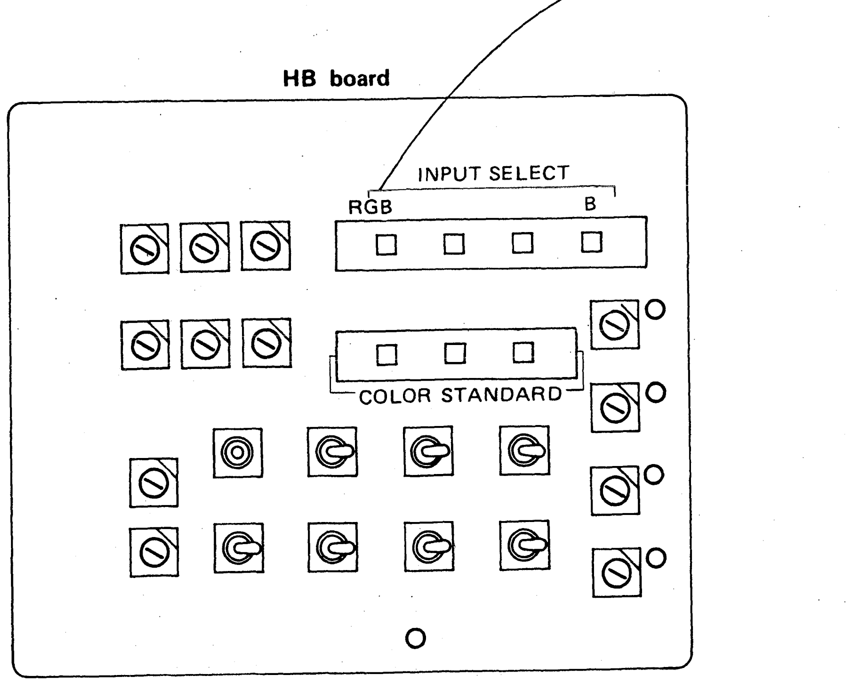
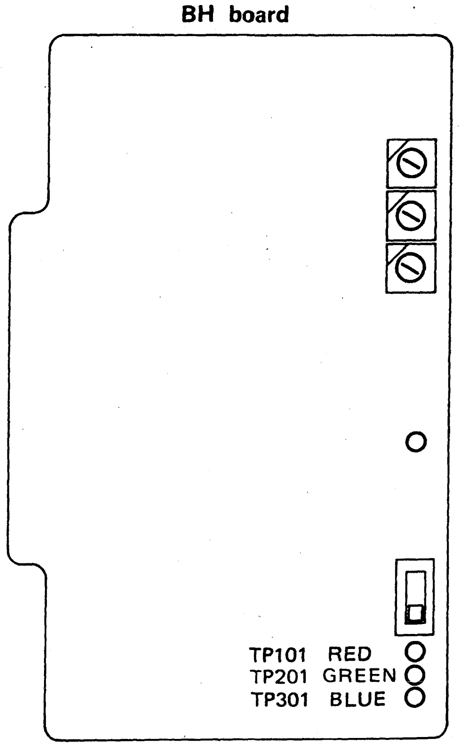


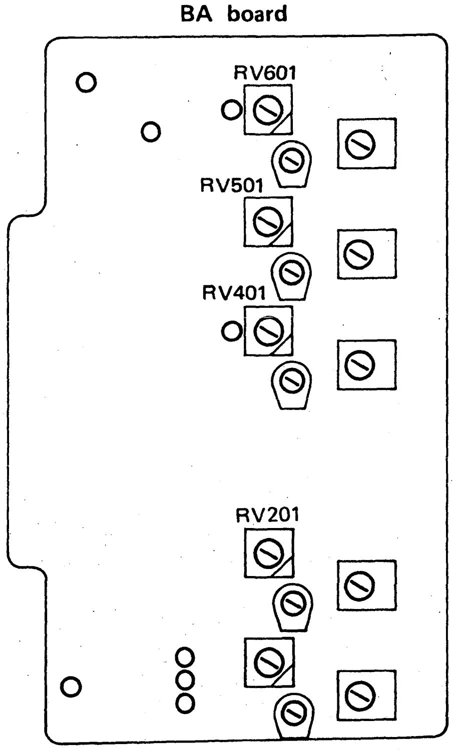
Fig. 3-5

FRONT PANEL (R)


SYNC selector
EXT ⊏⊐
INPUT selector
B ⊏⊐


RGB ⊏⊐ ON
HB board
INPUT SELECT
RGB
B
COLOR STANDARD


BH board
TP101 RED
TP201 GREEN
TP301 BLUE


BA board
RV601
RV501
RV401
RV201

4. BA Board INPUT CIRCUIT FREQUENCY CHARACTERISTIC ADJUSTMENT

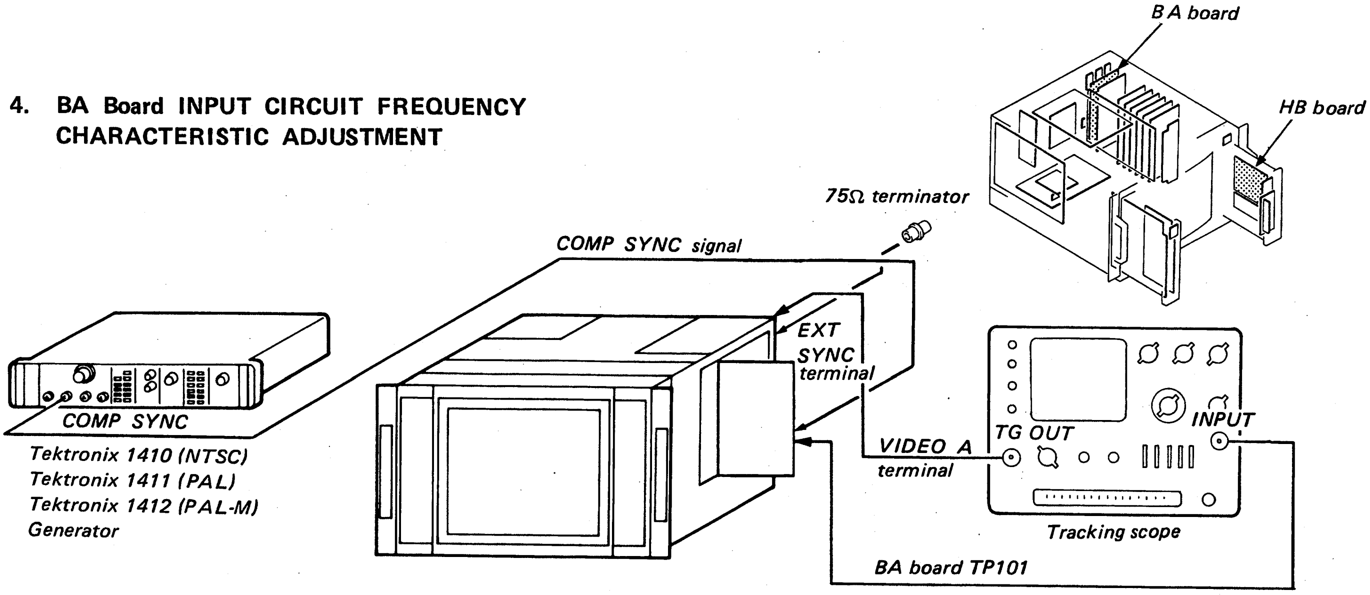

BA board
HB board
75Ω terminator
COMP SYNC signal
EXT SYNC terminal
COMP SYNC
Tektronix 1410 (NTSC)
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
VIDEO A terminal
TG OUT
INPUT
Tracking scope
BA board TP101

Fig. 4-1

1. Complete the connection as shown in Fig. 4-1.
   - INPUT selector . . . . A (⊓)
   - SYNC selector . . . . EXT (⊓)
   - CONTRAST control . . . . Minimum
   - BRIGHTNESS control . . . . Minimum
2. Adjust CV101 so that minimum as shown in Fig. 4-2.

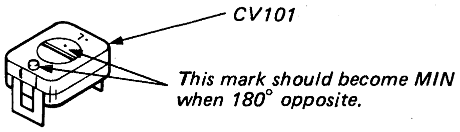

CV101
This mark should become MIN when 180° opposite.

Fig. 4-2

3. Adjust output waveform peak to 12MHz with CV102 of the BA board as shown in Fig. 4-3.

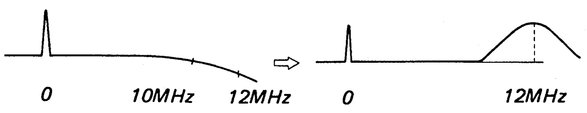


Fig. 4-3

4. Adjust CV101 of the BA board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 4-4.

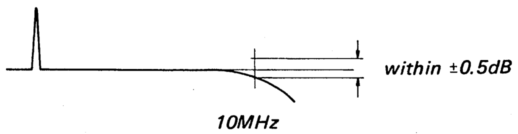
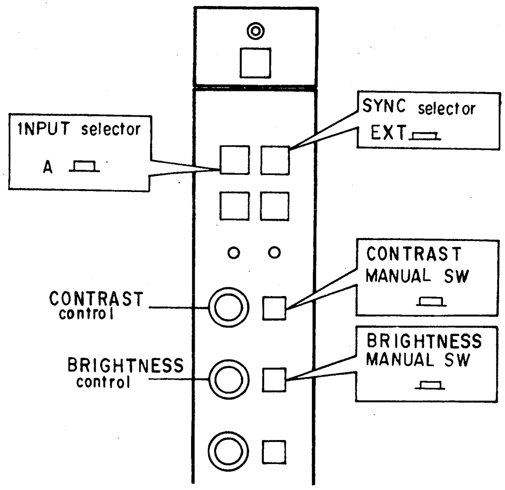
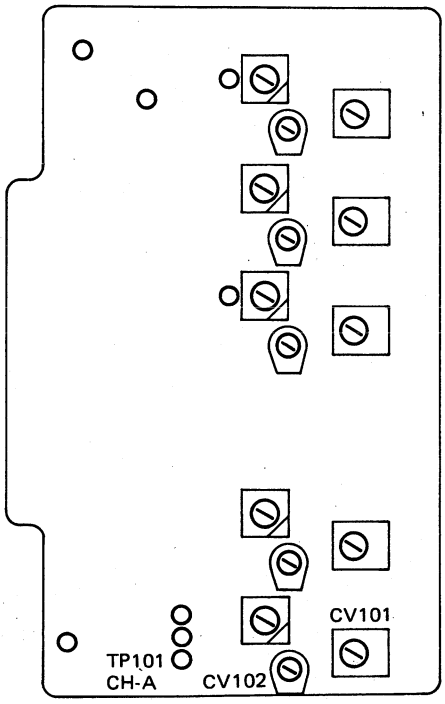


Fig. 4-4

FRONT PANEL (R)


INPUT selector
A ⊓
SYNC selector
EXT ⊓
CONTRAST MANUAL SW
⊓
CONTRAST control
BRIGHTNESS MANUAL SW
⊓
BRIGHTNESS control

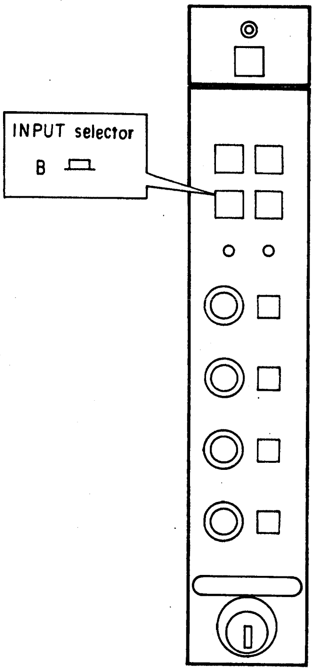
BA board


TP101
CH-A
CV102
CV101

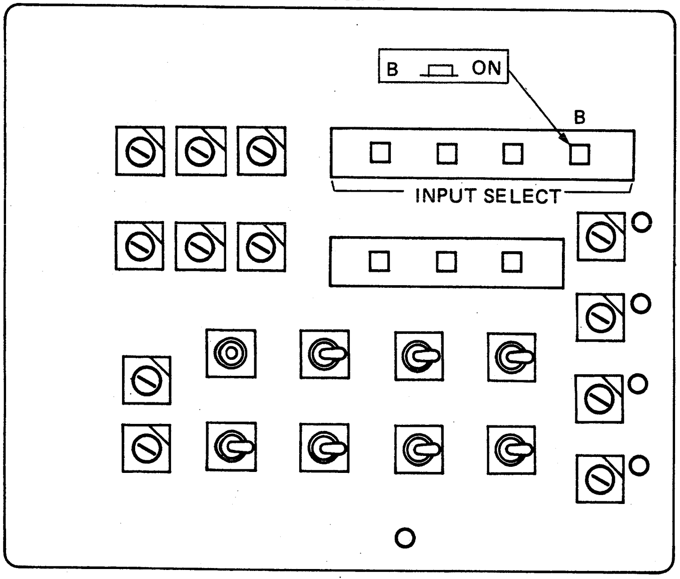
5. In the same way, perform the adjustment for B CH, under the following conditions.

INPUT	INPUT selector (FRONT PANEL (A)	INPUT SELECT buttons (SUB CONTROL PANEL)	TP (BA board)	CV (BA board)
B	B	B	TP201	CV201, 202
R/R-Y	B	RGB	TP401	CV401, 402
G/Y/TEST	B	RGB	TP501	CV501, 502
B/B-Y	B	RGB	TP601	CV601, 602

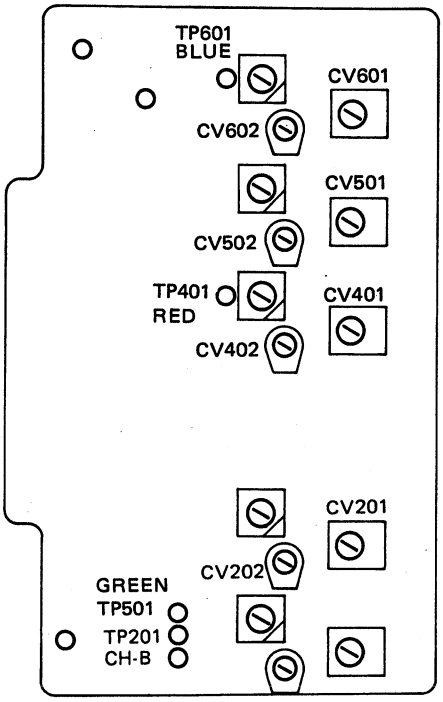
FRONT PANEL (R)


INPUT selector
B

HB board


B ON
B
INPUT SELECT

BA board


TP601
BLUE
CV601
CV602
CV501
CV502
TP401
RED
CV401
CV402
CV201
CV202
GREEN
TP501
TP201
CH-B

5. BG Board FREQUENCY CHARACTERISTIC ADJUSTMENT

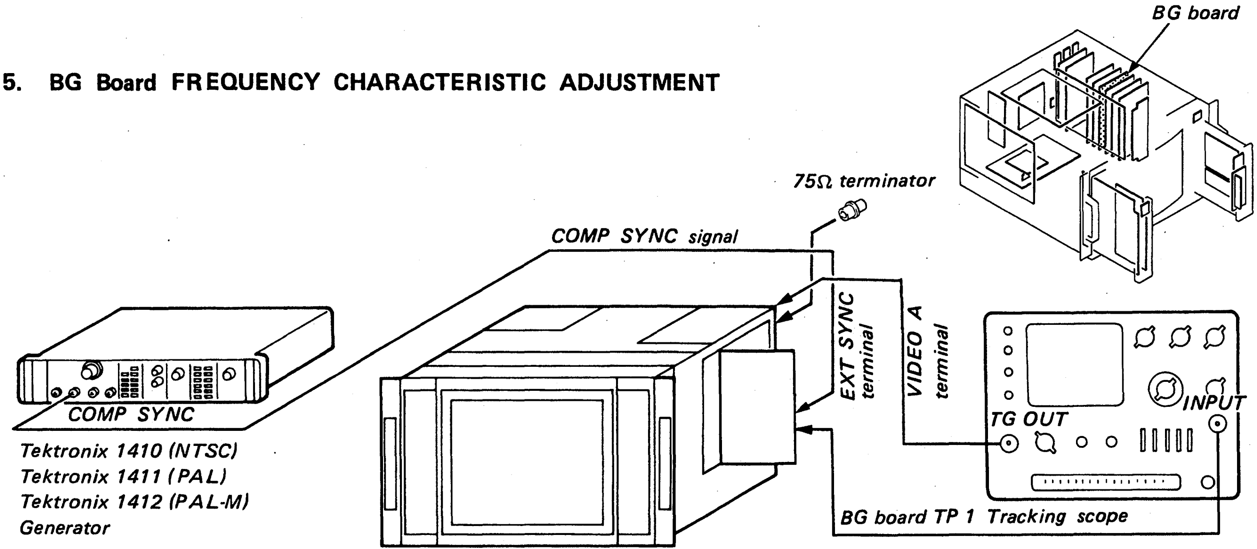
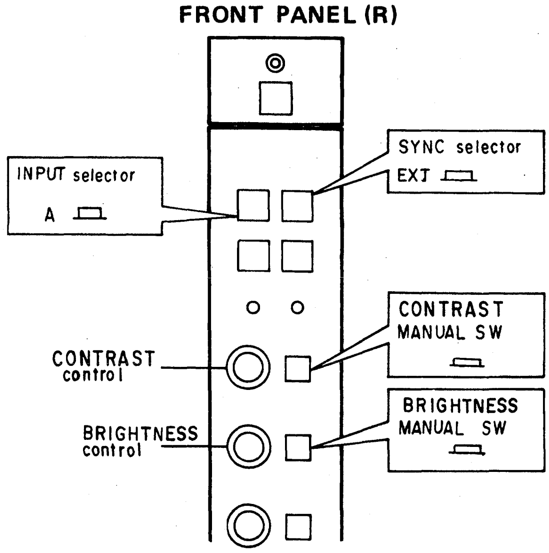

BG board
75Ω terminator
COMP SYNC signal
COMP SYNC
Tektronix 1410 (NTSC)
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
EXT SYNC terminal
VIDEO A terminal
TG OUT
INPUT
BG board TP 1 Tracking scope

Fig. 5-1


FRONT PANEL (R)
INPUT selector
A
SYNC selector
EXT
CONTRAST control
CONTRAST MANUAL SW
BRIGHTNESS control
BRIGHTNESS MANUAL SW

1. Complete the connections as shown in Fig. 5-1.
   - INPUT selector (FRONT PANEL (R)) . . . . A (▭)
   - SYNC selector (FRONT PANEL (R)) . . . . . . EXT (▭)
   - CONTRAST control . . . . Minimum
   - BRIGHTNESS control . . . . Minimum
   - S1 (BG Board) . . . . 4.5MHz (*4.5* ▣ *6.5*)
2. Adjust RV1, CV2 and CV3 of the BG board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 5-2. (within 0±0.5dB)

   *Waveform movement by RV1, CV2, CV3

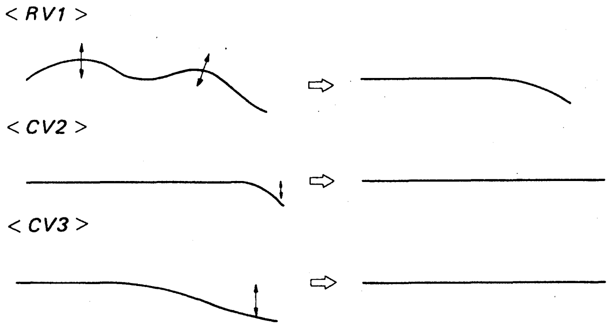
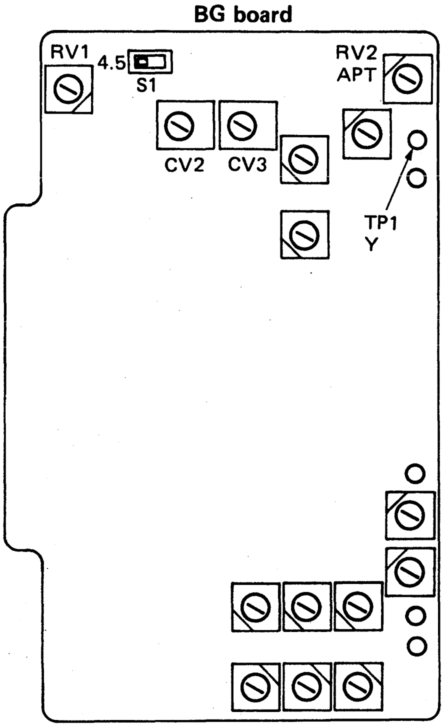


Fig. 5-2


BG board
RV1
4.5
S1
RV2
APT
CV2
CV3
TP1
Y

3. Adjust with RV2 (BG board) to the position in which the APT (Fig. 5-3.) begins to become effective.

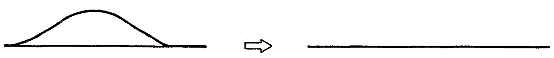


Fig. 5-3

6. COMPONENT INPUT LEVEL ADJUSTMENT

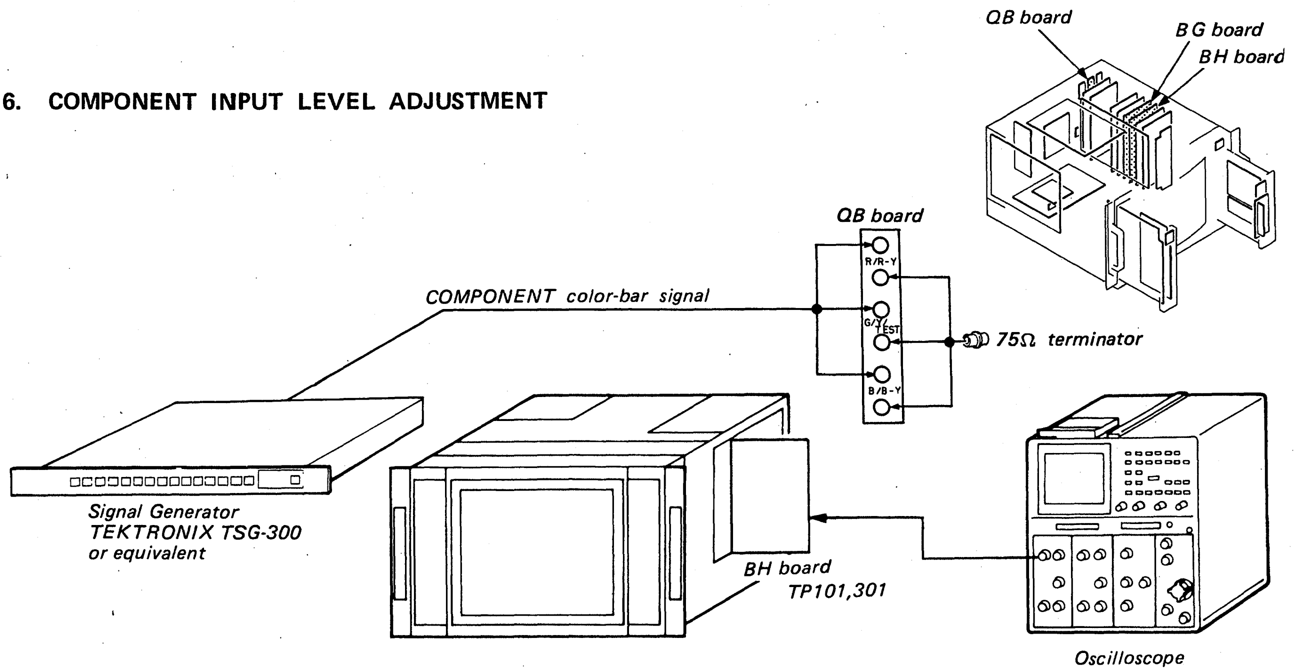

QB board
BG board
BH board
QB board
R/R-Y
G/Y
TEST
B/B-Y
COMPONENT color-bar signal
75Ω terminator
Signal Generator
TEKTRONIX TSG-300
or equivalent
BH board
TP101,301
Oscilloscope

Fig. 6-1

1. Complete the connections as shown in Fig. 6-1.
   - INPUT selector . . . . B (FRONT PANEL (R))
   - INPUT SELECT buttons (RIGHT SIDE DRAWER) (HB board) . . . . COMPONENT
2. Connect an oscilloscope to the TP-101 of BH board.
3. Adjust RV21 of BG board so that the output waveform becomes flat. (Fig. 6-2)

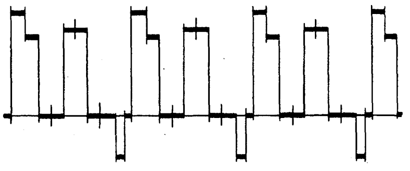


Fig. 6-2

4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV22 of BG board so that the input waveform becomes flat. (Fig. 6-3)

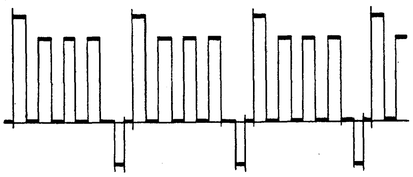
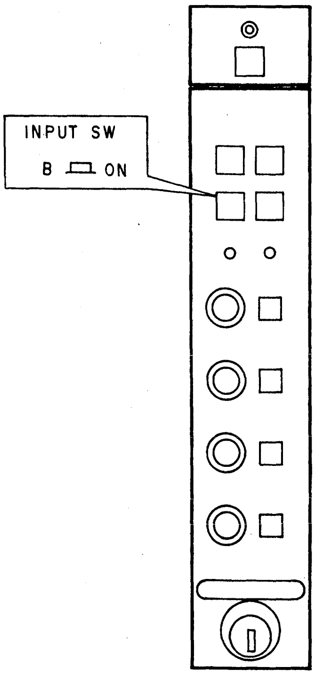
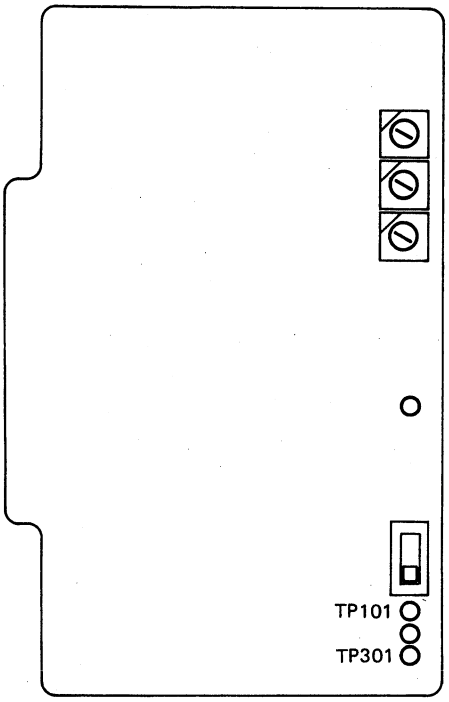


Fig. 6-3

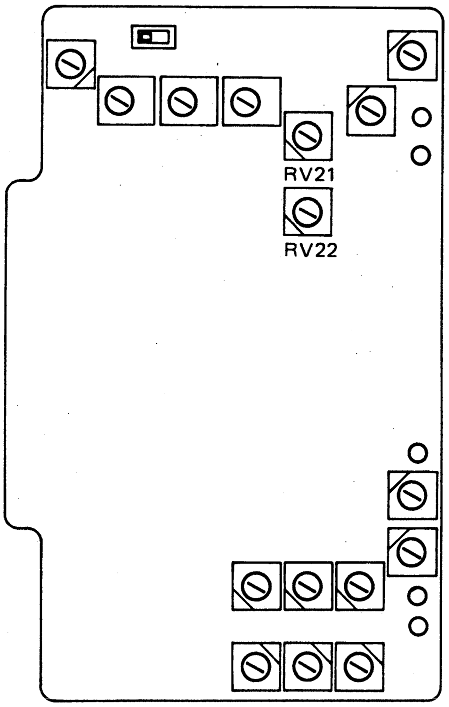
FRONT PANEL (R)


INPUT SW
B ⊓ ON

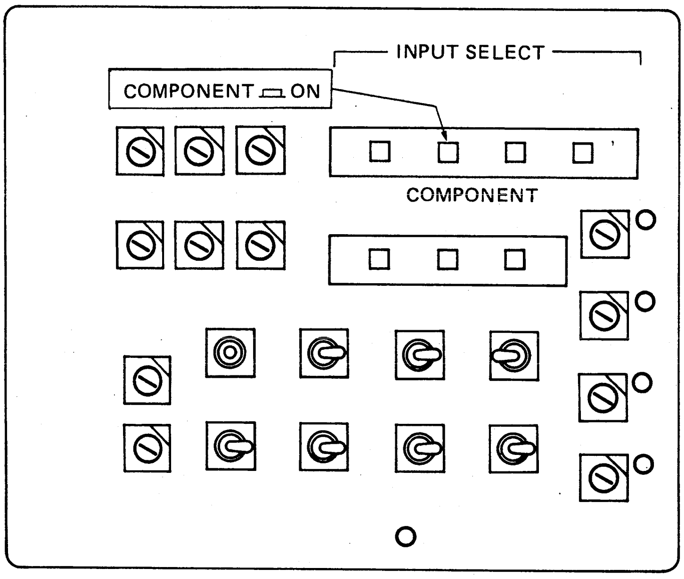
BH board


TP101
TP301

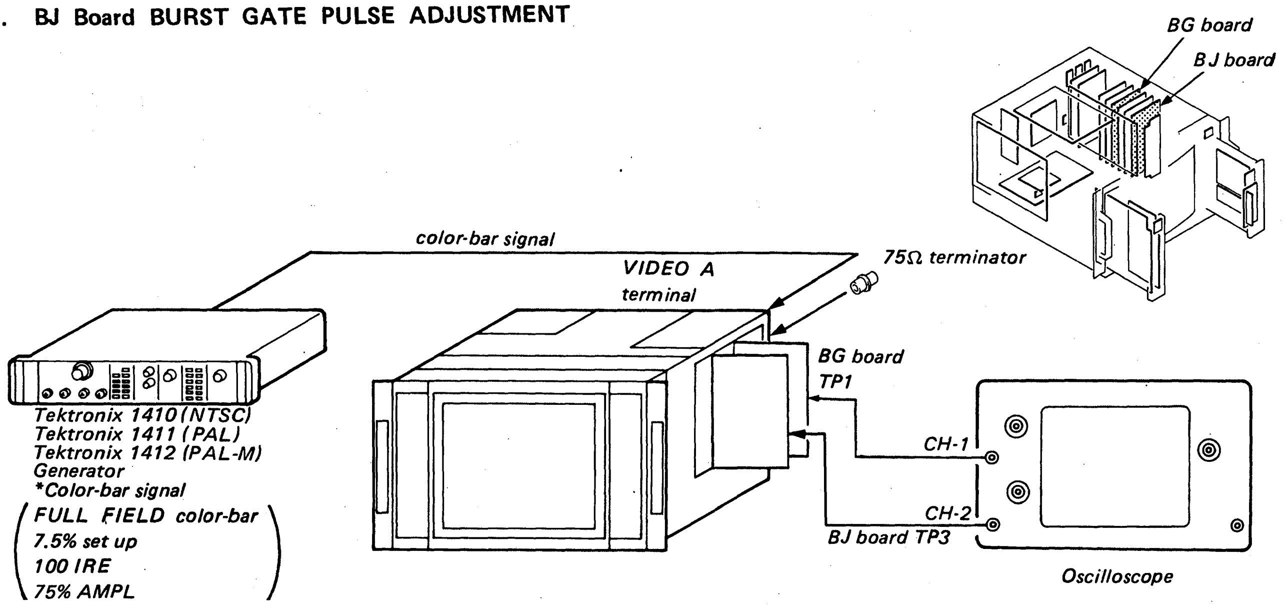
BG board



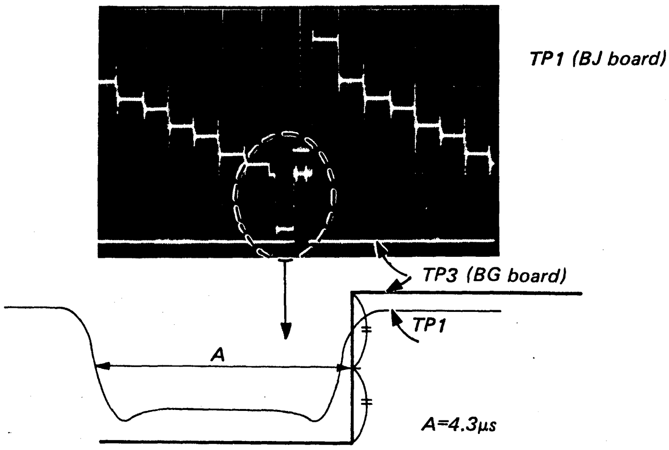
HB board


INPUT SELECT
COMPONENT ⊏ ON
COMPONENT

7. BJ Board BURST GATE PULSE ADJUSTMENT


BG board
B J board
color-bar signal
VIDEO A terminal
75Ω terminator
BG board TP1
CH-1
CH-2
BJ board TP3
Oscilloscope
Tektronix 1410 (NTSC)
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
*Color-bar signal
FULL FIELD color-bar
7.5% set up
100 IRE
75% AMPL

1. Input a color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP3 of BJ board.
3. Adjust RV8 of BJ board so that the A is 4,3μs as shown in Fig. 7-1.



* *Adjust (A), from SYNC fall to B.G.P. (BURST GATE PULSE) rise, to 4.3μs.*

Fig. 7-1

4. Adjust RV4 of BJ board so that the burst gate pulse width is 4.5μs as shown in Fig. 7-2.

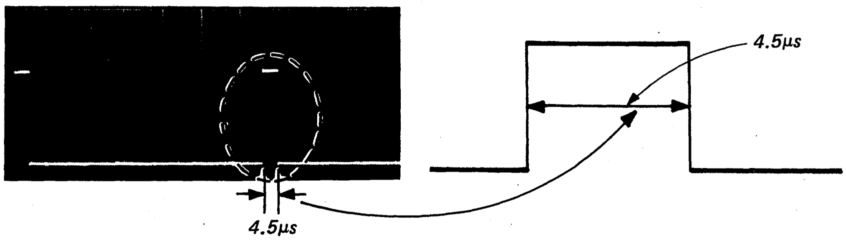
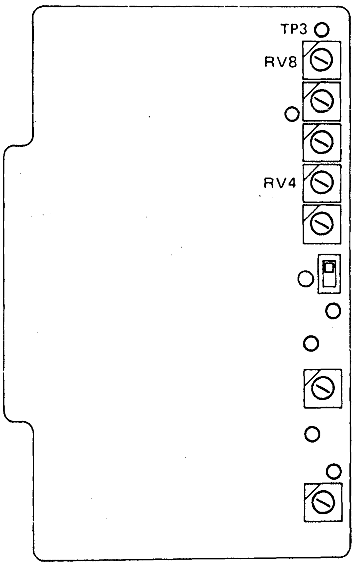
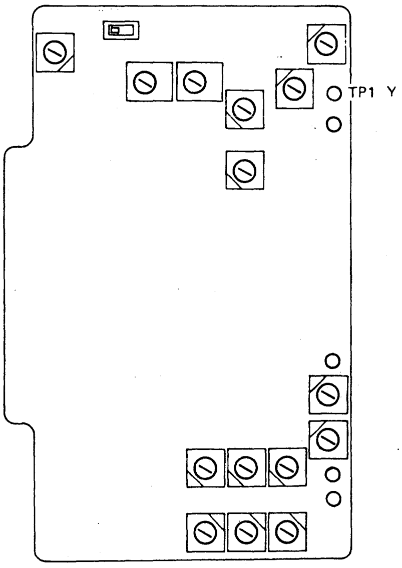


Fig. 7-2

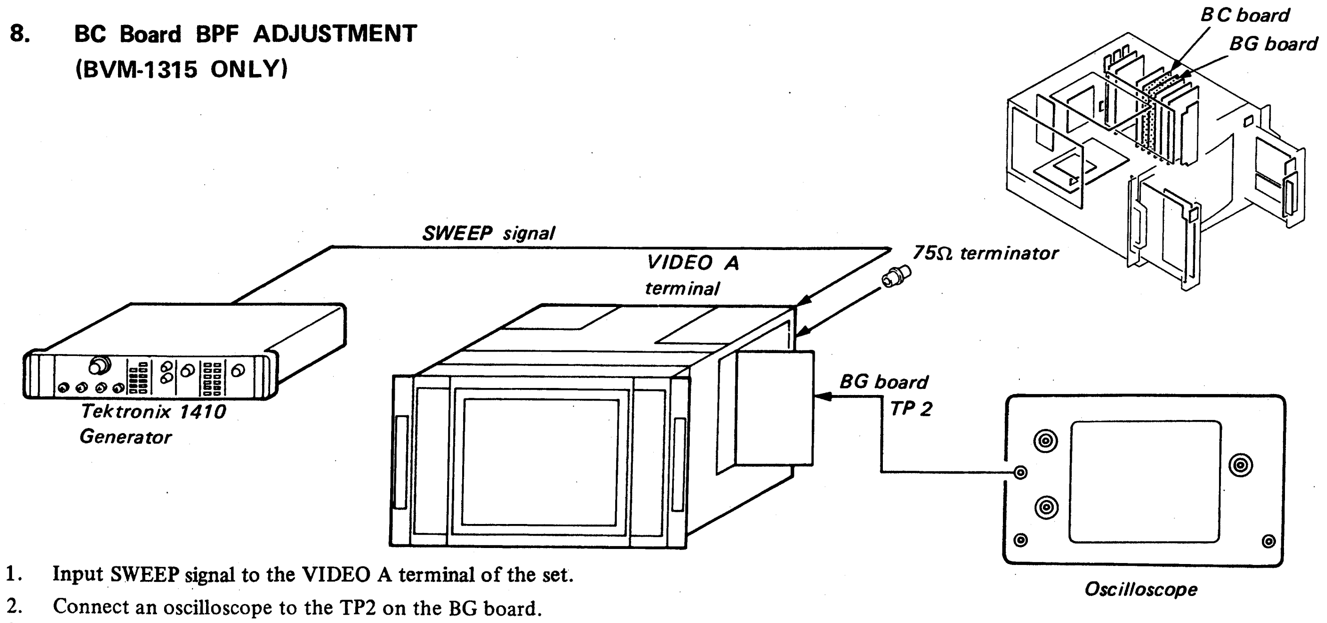
BJ board



BG board



8. BC Board BPF ADJUSTMENT (BVM-1315 ONLY)


B C board
BG board
SWEEP signal
VIDEO A
terminal
75Ω terminator
BG board
TP 2
Tektronix 1410
Generator
Oscilloscope

1. Input SWEEP signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the V/dw of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 8-1.

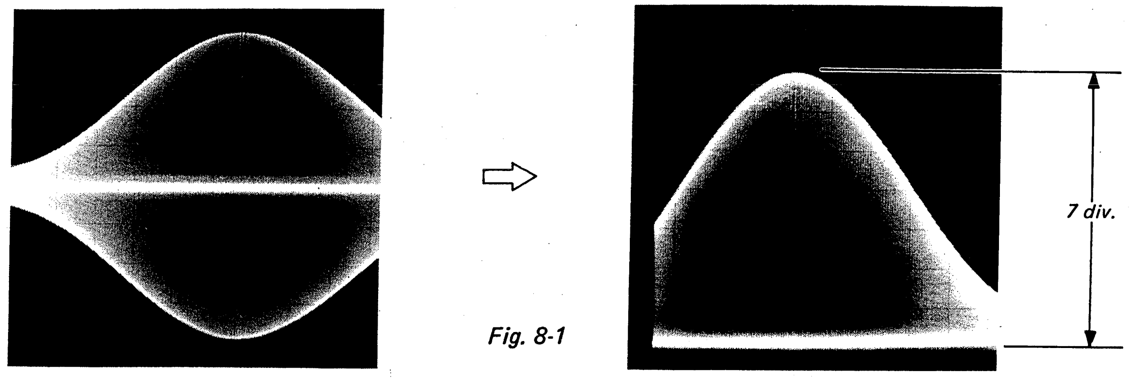
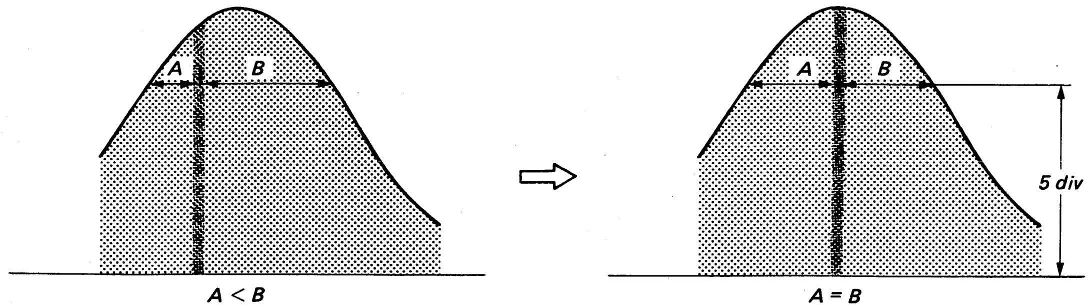


Fig. 8-1

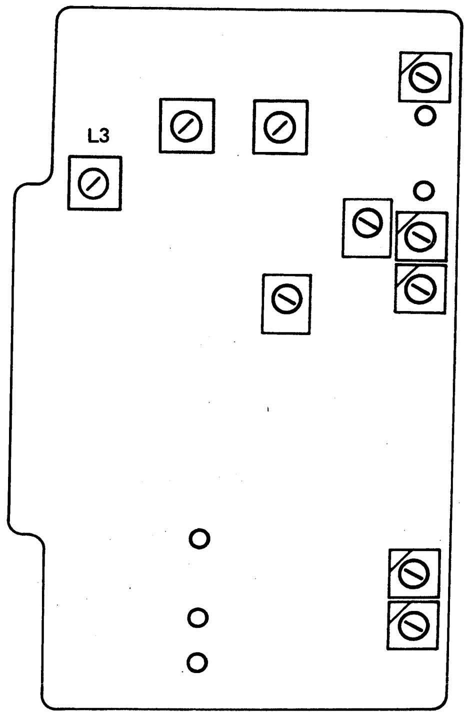
4. Adjust L3 on the BC board so that A is equal to B as shown in Fig. 8-2.


A
B
A < B
A
B
5 div
A = B

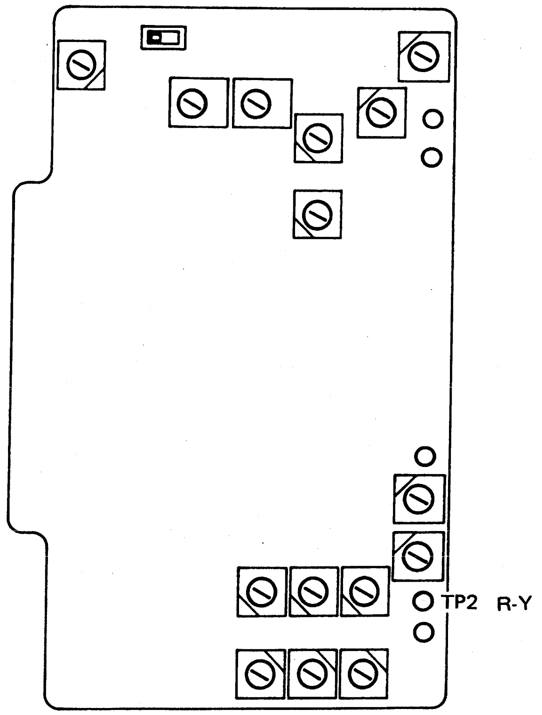
A is equal to B when the amplitude is 5 div.

Fig. 8-2

BC board



BG board



9. BC Board PHASE SHIFT ADJUSTMENT (BVM-1315 ONLY)

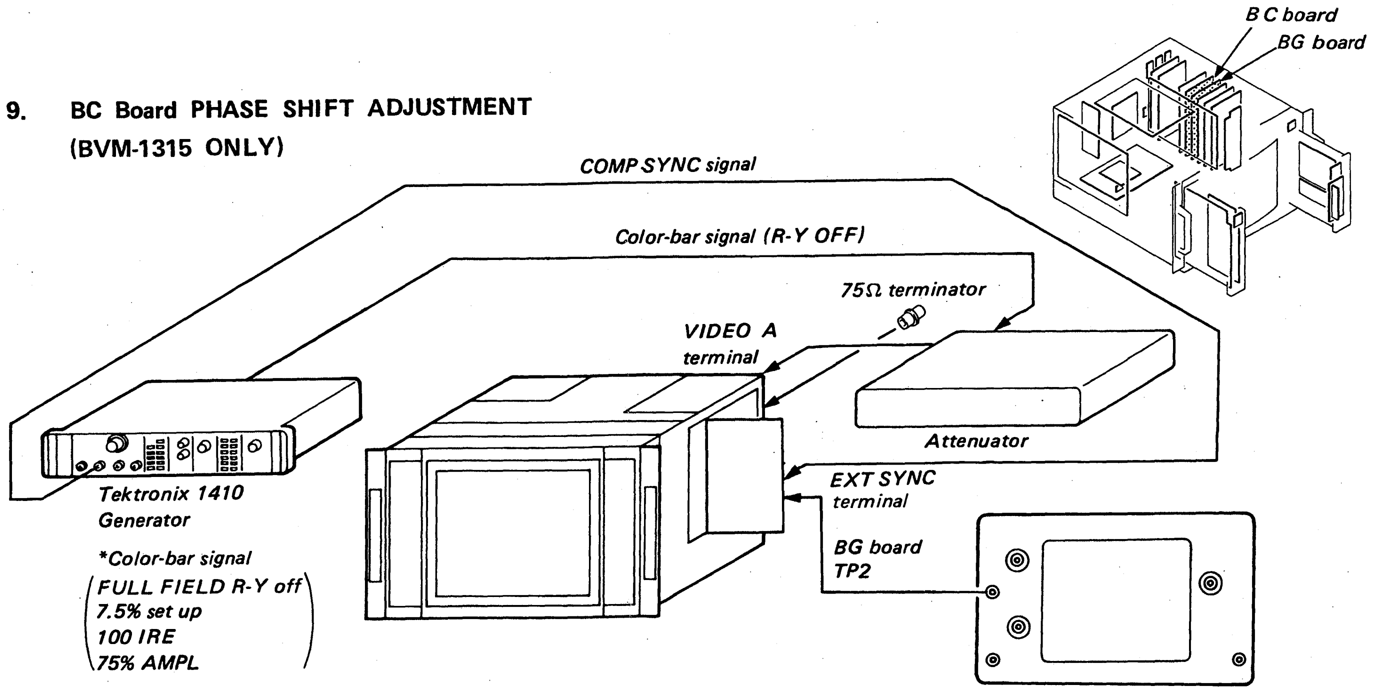

B C board
BG board
COMP SYNC signal
Color-bar signal (R-Y OFF)
75Ω terminator
VIDEO A terminal
Attenuator
EXT SYNC terminal
BG board TP2
Oscilloscope
Tektronix 1410 Generator
*Color-bar signal
FULL FIELD R-Y off
7.5% set up
100 IRE
75% AMPL

Fig. 9-1

1. Complete the connection as shown in Fig. 9-1.
   - INPUT selector (FRONT PANEL (R)) . . . . A (▭)
   - SYNC selector (FRONT PANEL (R)) . . . . . . EXT (▭)
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the waveform flat with the PHASE control of front panel (R) as shown in Fig. 9-2.

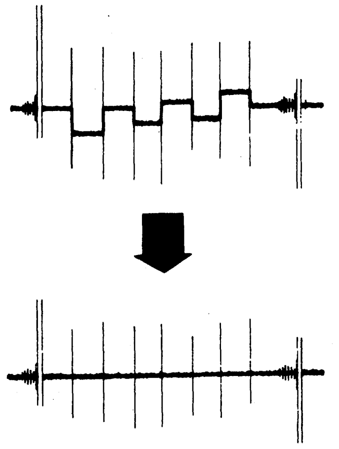
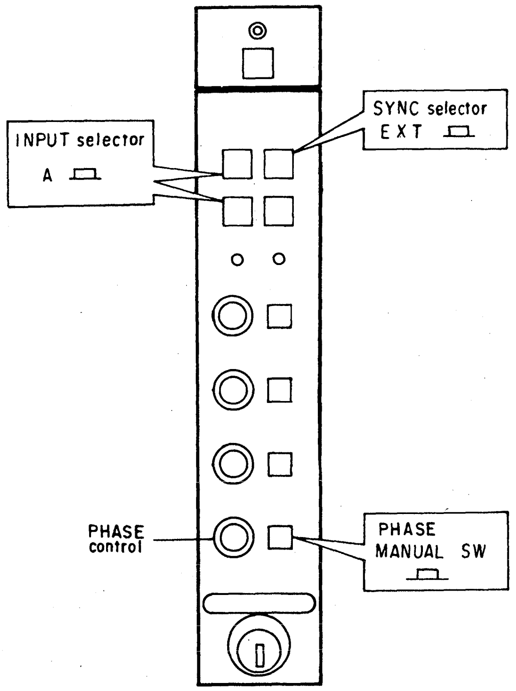


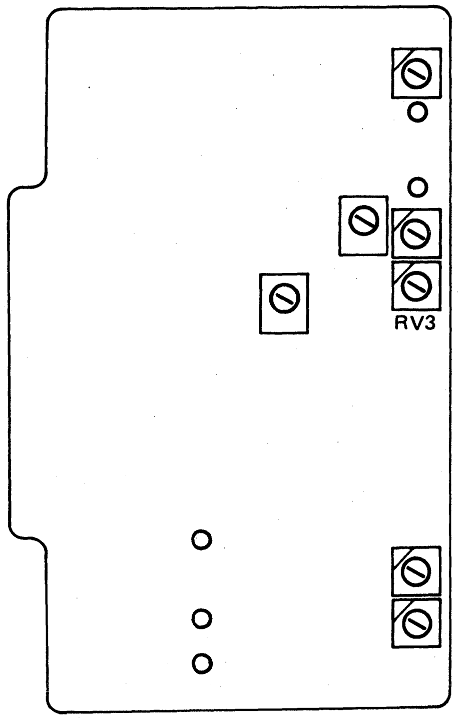
Fig. 9-2

4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV3 on the BC board so that the output waveform becomes flat as shown in Fig. 9-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.

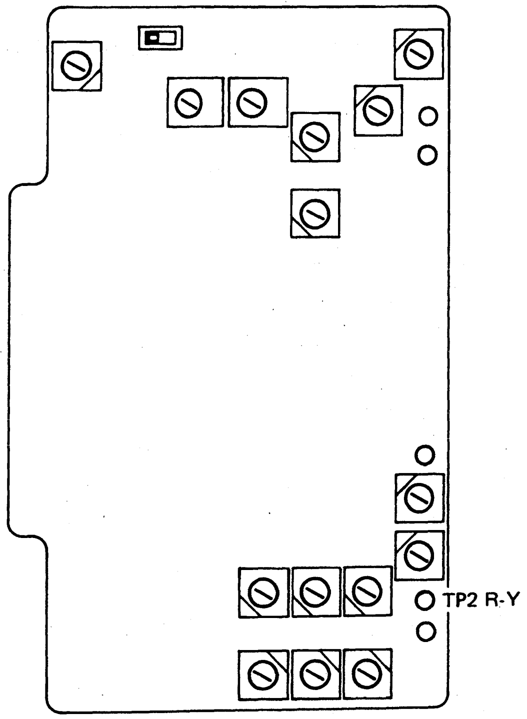
FRONT PANEL (R)


INPUT selector
A ▭
SYNC selector
EXT ▭
PHASE control
PHASE MANUAL SW
▭

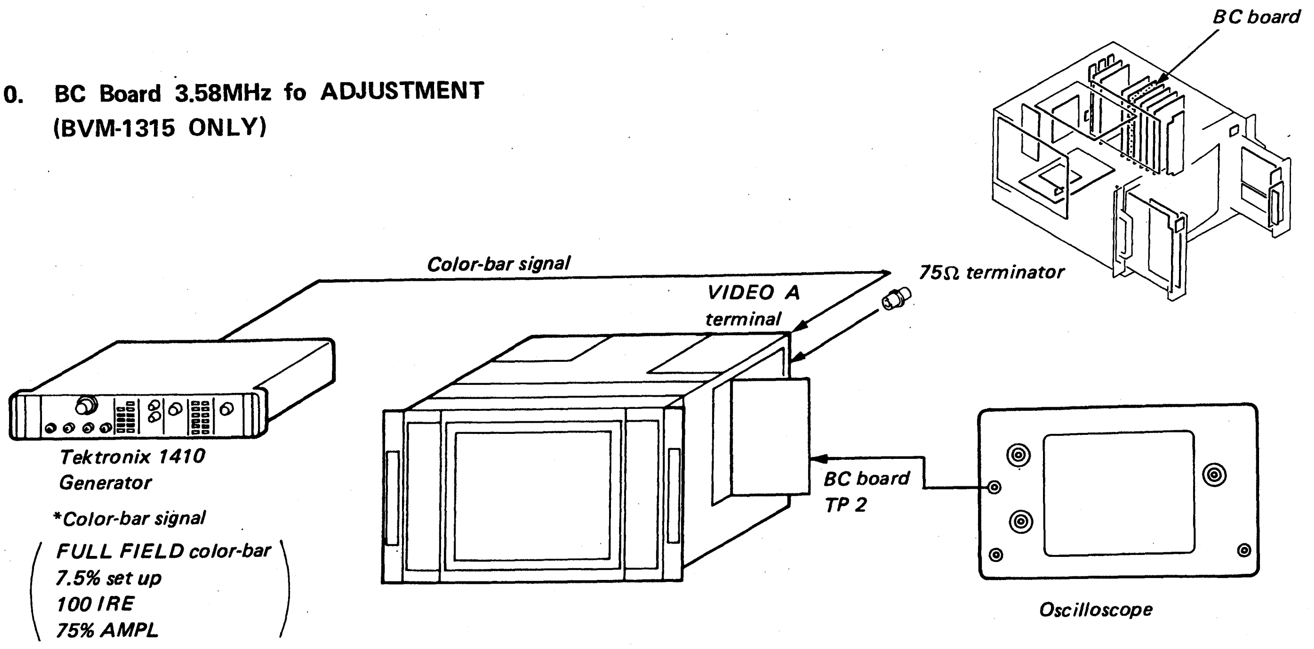
BC board



BG board



10. BC Board 3.58MHz fo ADJUSTMENT (BVM-1315 ONLY)


BC board
Color-bar signal
VIDEO A
terminal
75Ω terminator
Tektronix 1410
Generator
*Color-bar signal
FULL FIELD color-bar
7.5% set up
100 IRE
75% AMPL
BC board
TP 2
Oscilloscope

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BC board.
3. Short-circuit between TP ⑥ and ⑦ of BC board with a jumper wire.
4. Adjust CV2 of BC board so that the output waveform is shifted slowly as shown in Fig. 10-1.
5. Turn off the power of this monitor, and disconnect TP ⑥ and ⑦ of BC board.

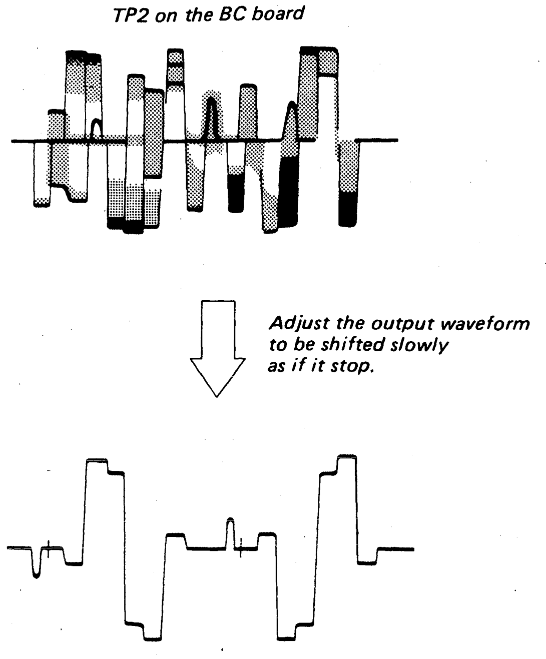
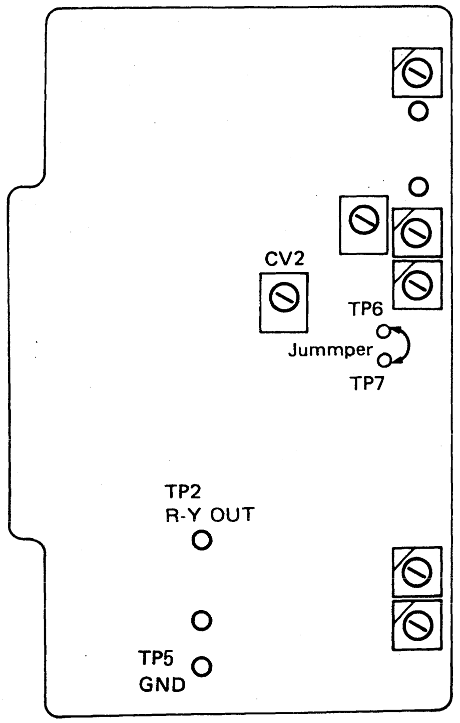


Fig. 10-1

BC board


CV2
TP6
Jummper
TP7
TP2
R-Y OUT
TP5
GND

11. BC Board COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-1315 ONLY)

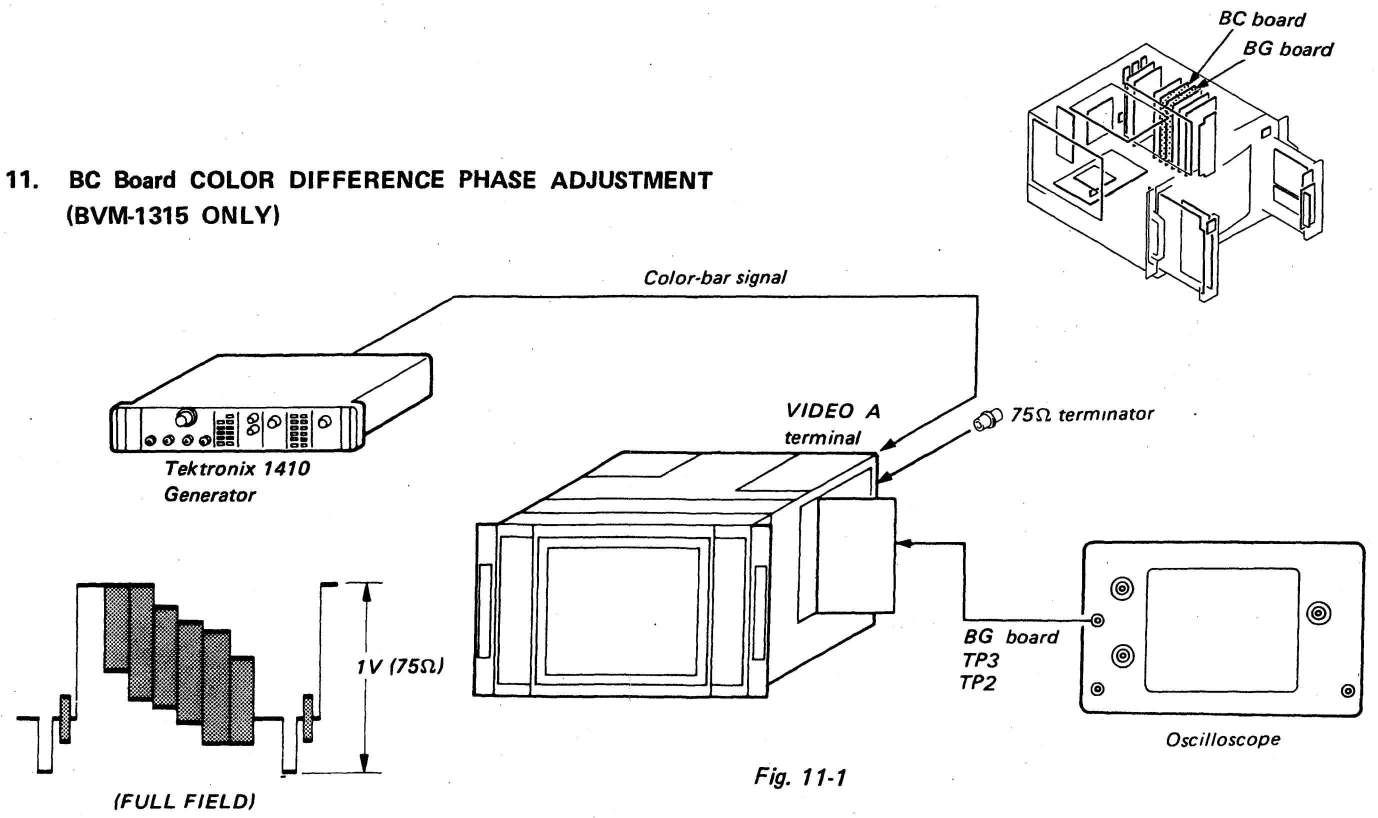

BC board
BG board
Color-bar signal
VIDEO A terminal
75Ω terminator
Tektronix 1410 Generator
1V (75Ω)
(FULL FIELD)
BG board
TP3
TP2
Oscilloscope

Fig. 11-1

1. Complete the connections as shown in Fig. 11-1.
2. Turn on the power of this monitor.

B-Y System Adjustment

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV2 on the BC board so that the ouput waveform is flat. (See Fig. 11-2.)

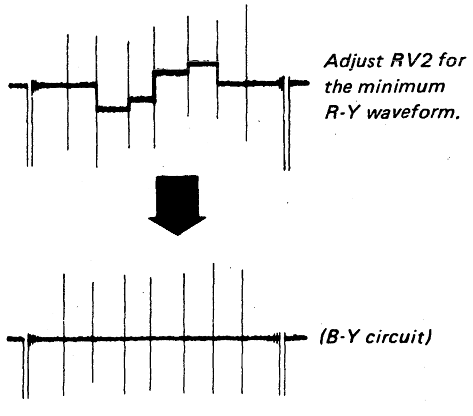

Adjust RV2 for the minimum R-Y waveform.
(B-Y circuit)

Fig. 11-2

Quad Adjustment

5. Connect the oscilloscope probe to TP2 on the BG board. Turn on the B-Y signal of the signal generator, and turn off the (R-Y) signal. Then adjust CV1 on the BC board so that the output waveform is flat. (See Fig. 11-3)
6. Repeat the steps 3 to 6.

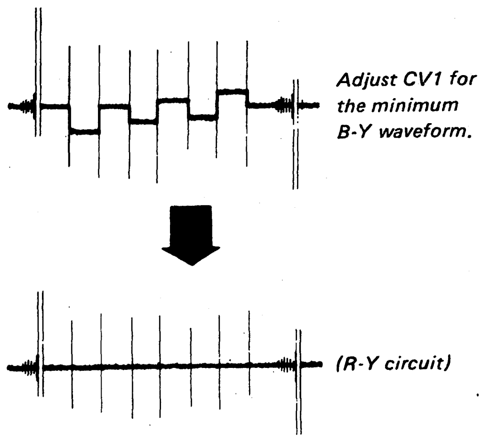
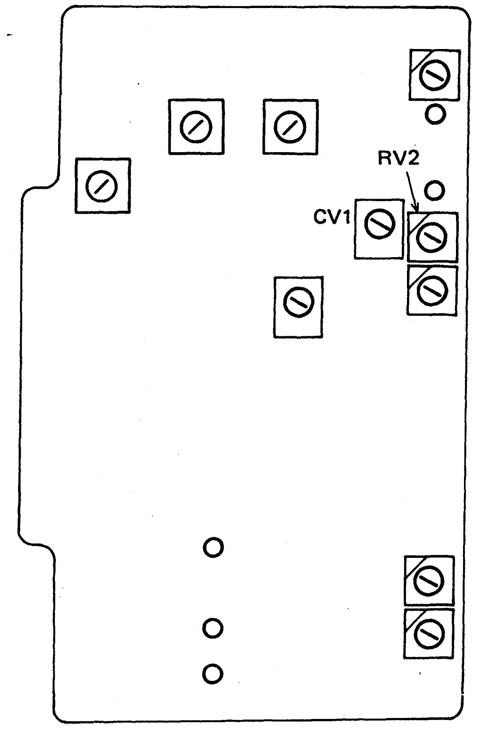
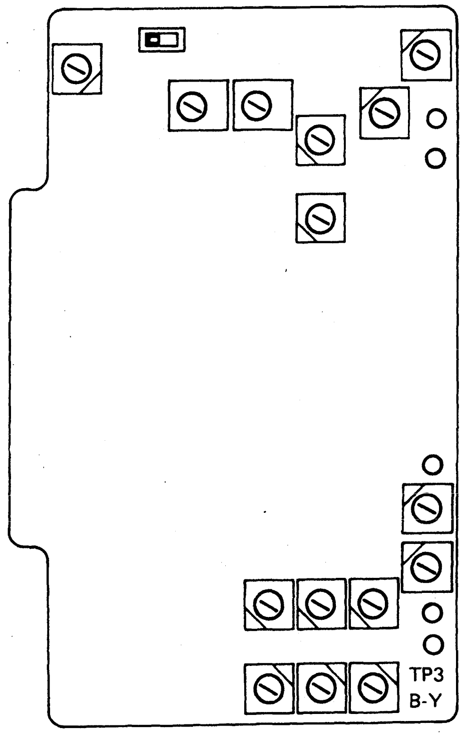

Adjust CV1 for the minimum B-Y waveform.
(R-Y circuit)

Fig. 11-3

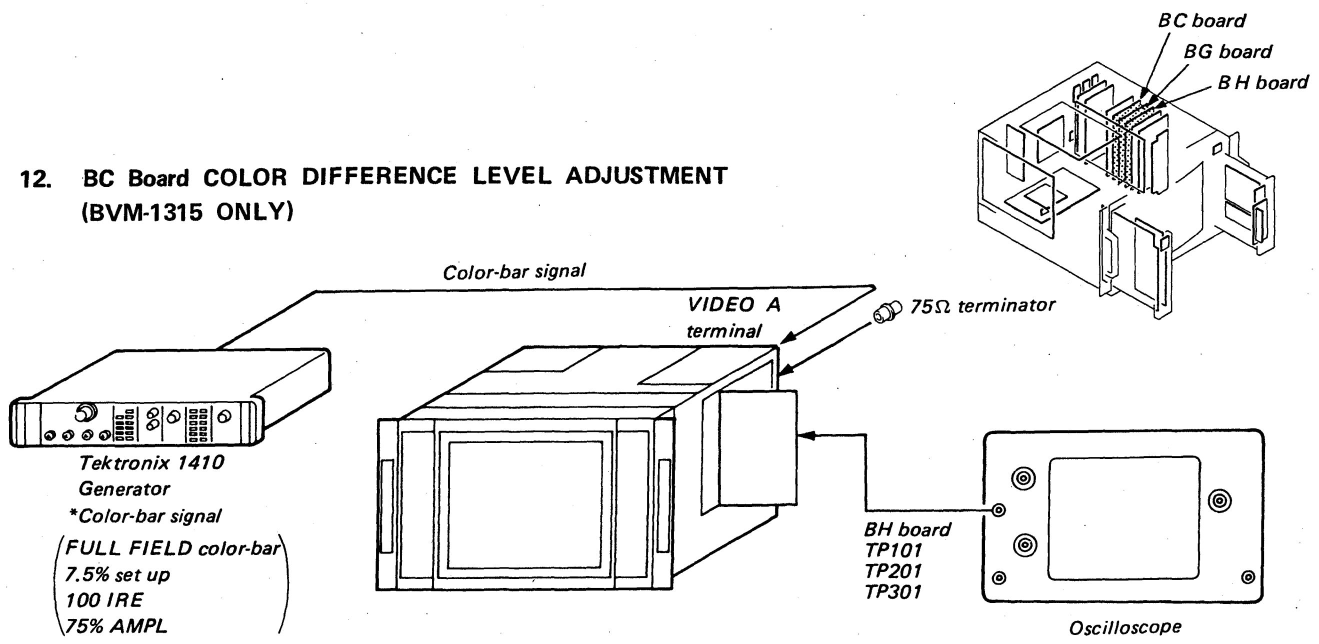
BC Board



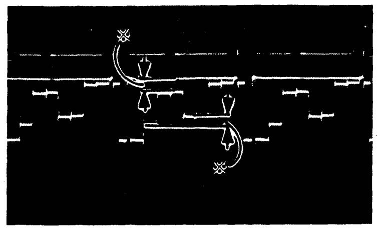
BG Board



12. BC Board COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-1315 ONLY)


BC board
BG board
B H board
Color-bar signal
VIDEO A terminal
75Ω terminator
Tektronix 1410 Generator
*Color-bar signal
FULL FIELD color-bar
7.5% set up
100 IRE
75% AMPL
BH board
TP101
TP201
TP301
Oscilloscope

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP101 of BH board.
3. Eliminate interval in the output waveform (mark ✱ in Fig. 12-1) with RV4.

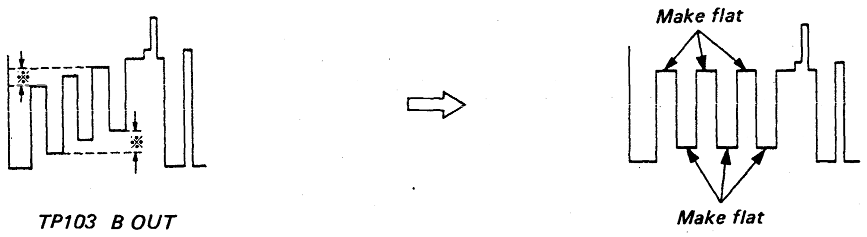


TP101 R OUT

Fig. 12-1

* Bring ✱ marked levels to zero respectively with RV4 on the BC board.

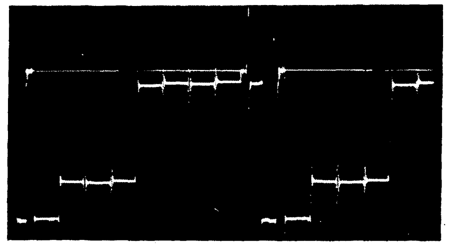
4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV5 of BC board so that the output waveform as shown in Fig. 12-2.


Make flat
Make flat

TP103 B OUT

Fig. 12-2

6. Connect an oscilloscope to the TP201 of BH board.
7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 12-3.



TP201 G OUT

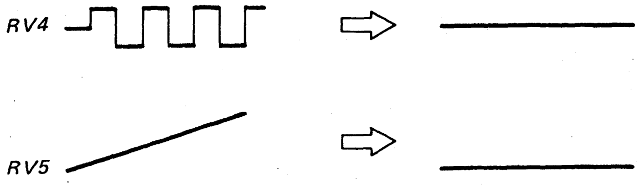
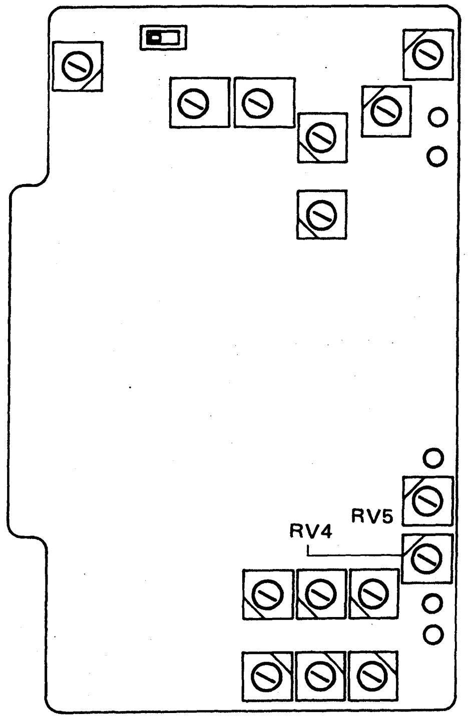
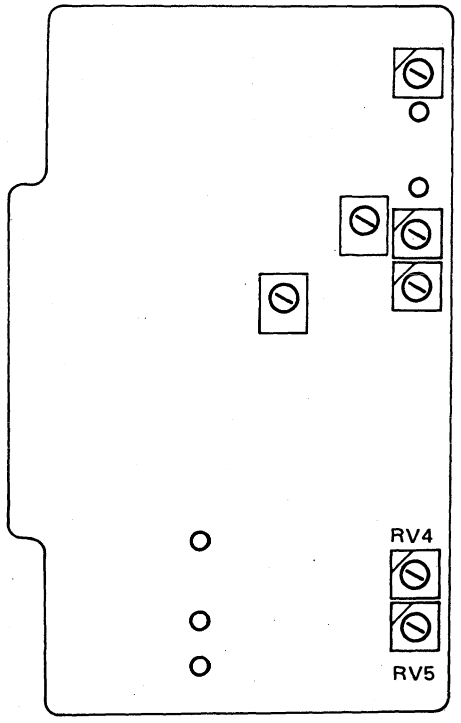


Fig. 12-3

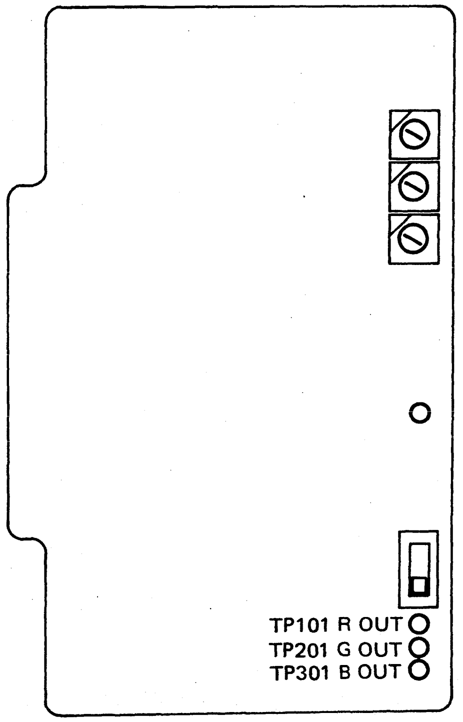
BG board



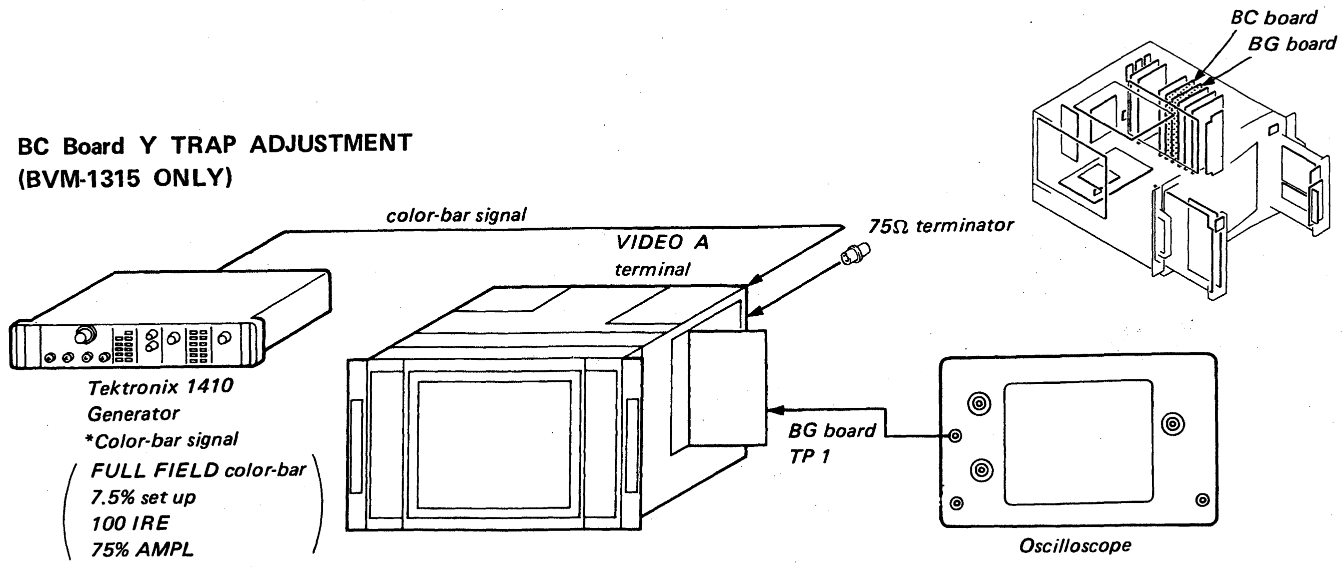
BC Board



BH Board


TP101 R OUT
TP201 G OUT
TP301 B OUT

13. BC Board Y TRAP ADJUSTMENT (BVM-1315 ONLY)


BC board
BG board
color-bar signal
VIDEO A
terminal
75Ω terminator
BG board
TP 1
Tektronix 1410
Generator
*Color-bar signal
FULL FIELD color-bar
7.5% set up
100 IRE
75% AMPL
Oscilloscope

1. Input color-bar signal to VIDEO A terminal of the set.
   - INPUT selector (FRONT PANEL (R)) . . . . . A(▭)
   - COLOR STANDARD buttons (SUB CONTROL PANEL) . . . . . NTSC(▭)
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BC board so that 3.58MHz subcarrier is minimum as shown in Fig. 13-1.

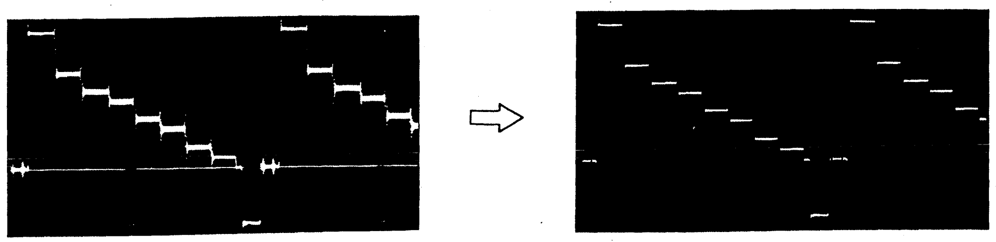
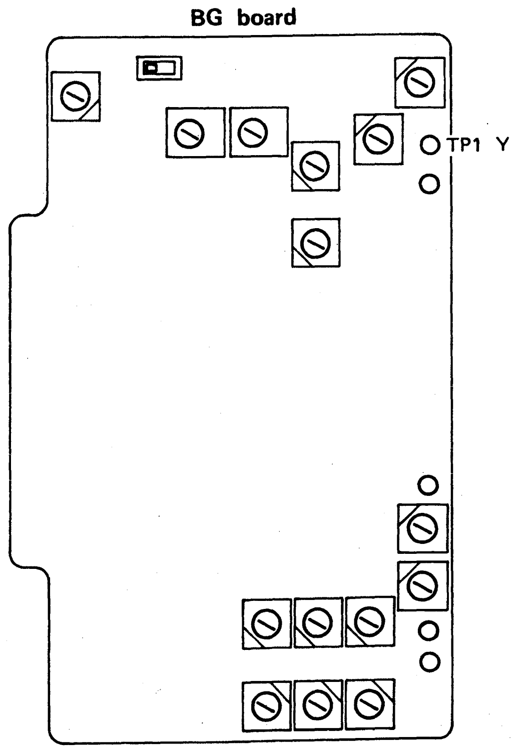
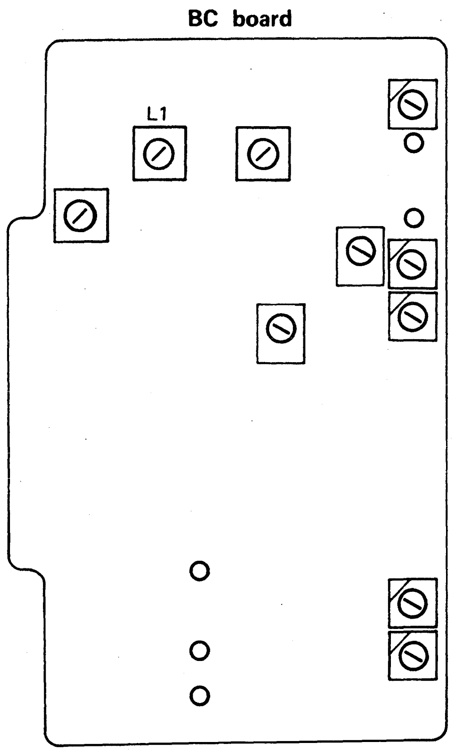
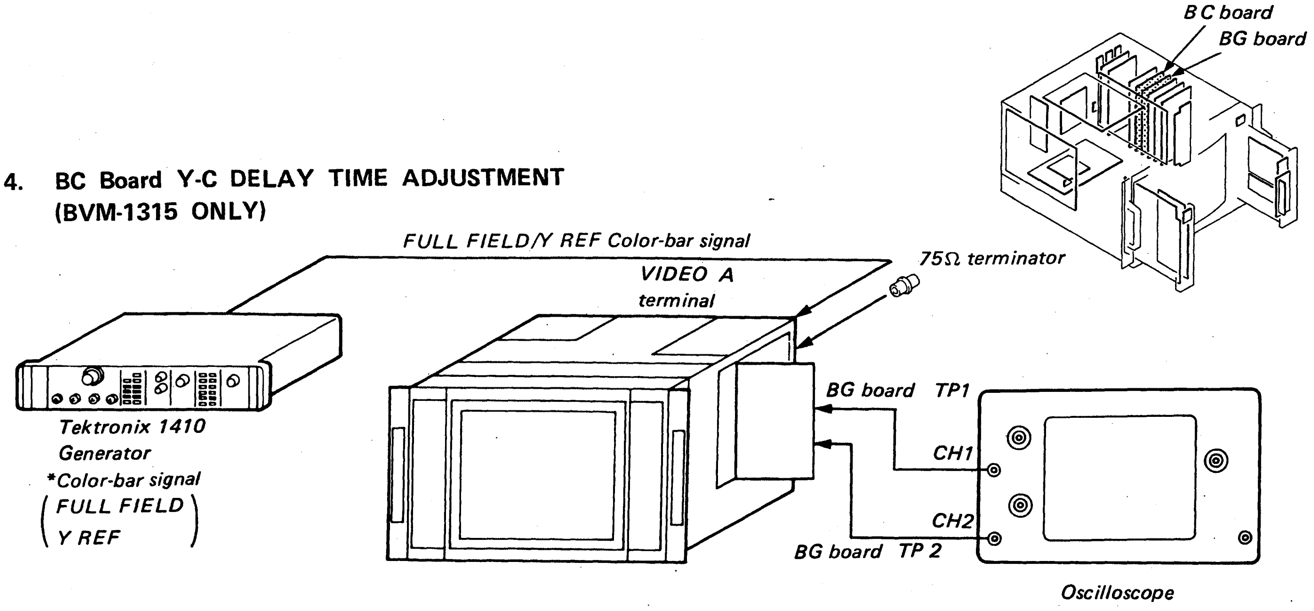


Fig. 13-1

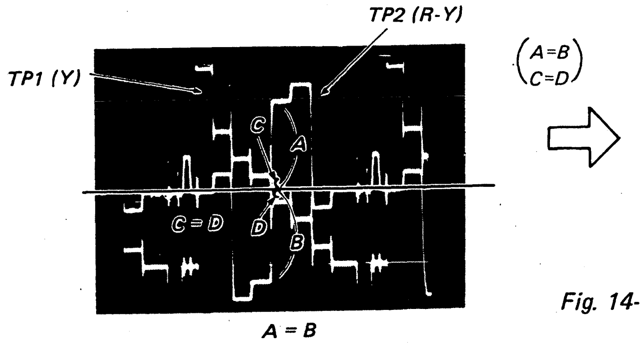

BG board
TP1 Y



14. BC Board Y-C DELAY TIME ADJUSTMENT (BVM-1315 ONLY)


B C board
BG board
FULL FIELD/Y REF Color-bar signal
VIDEO A
terminal
75Ω terminator
BG board TP1
CH1
CH2
BG board TP 2
Tektronix 1410
Generator
*Color-bar signal
FULL FIELD
Y REF
Oscilloscope

1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV1 of BC board so that the output waveform as shown in Fig. 14-1.



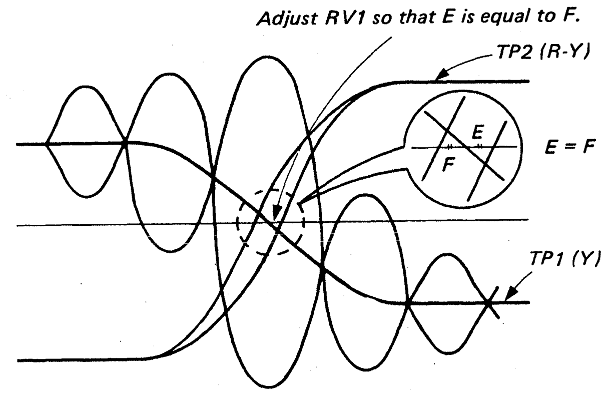
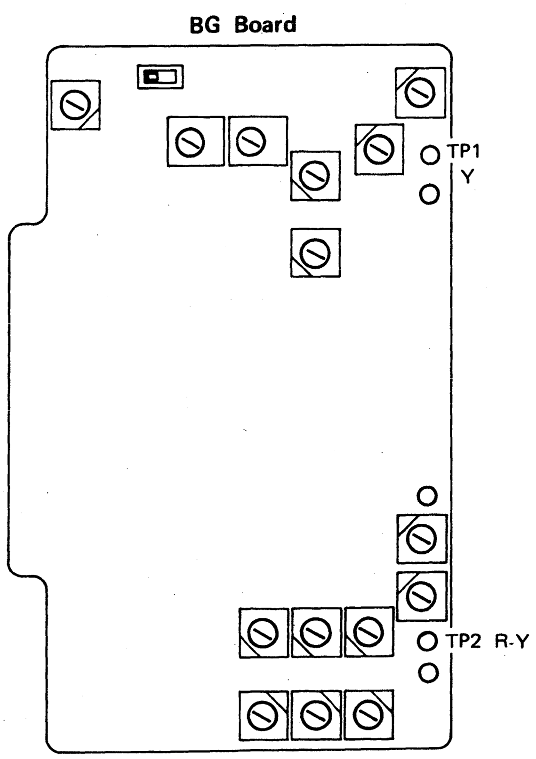
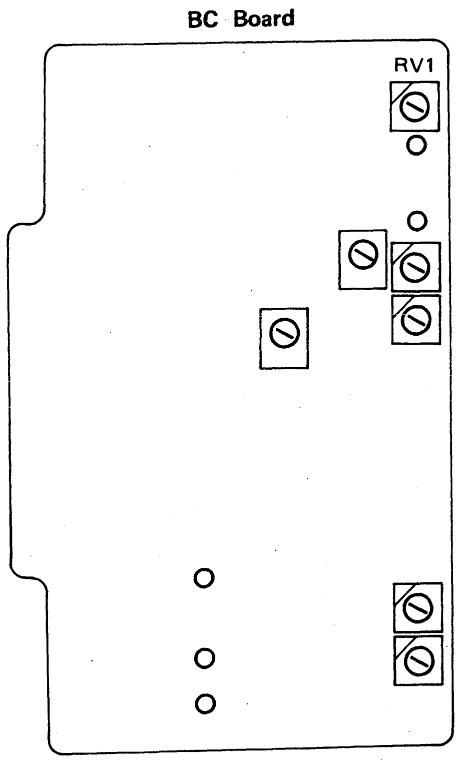
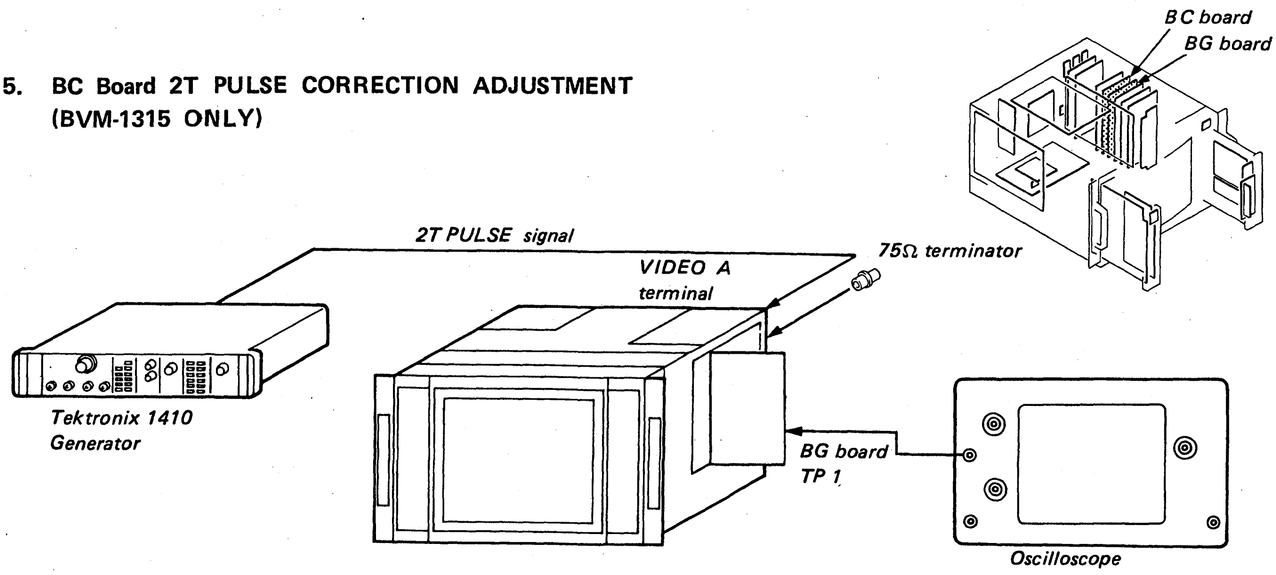


Fig. 14-1

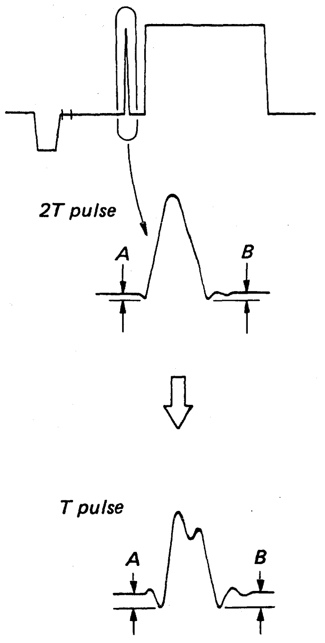

BG Board
TP1
Y
TP2 R-Y


BC Board
RV1

15. BC Board 2T PULSE CORRECTION ADJUSTMENT (BVM-1315 ONLY)


BC board
BG board
2T PULSE signal
VIDEO A terminal
75Ω terminator
Tektronix 1410 Generator
BG board TP 1
Oscilloscope

1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BC board so that A is equal to B as shown in Fig. 15-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 15-1.

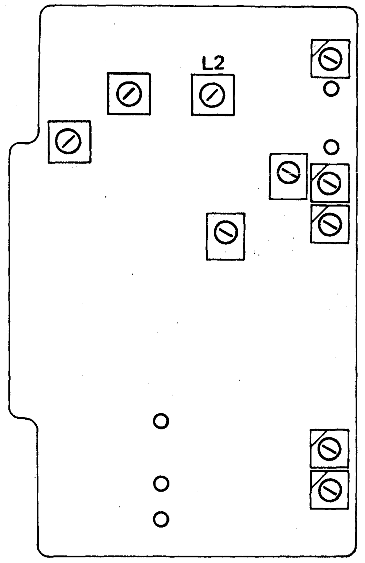

2T pulse
A
B
T pulse
A
B

* Adjust L2 to obtain the condition A = B.

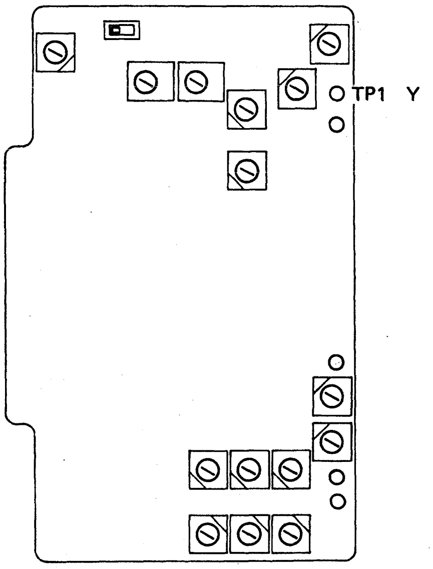
* The waveform balance should not be lost extremely.

Fig. 15-1

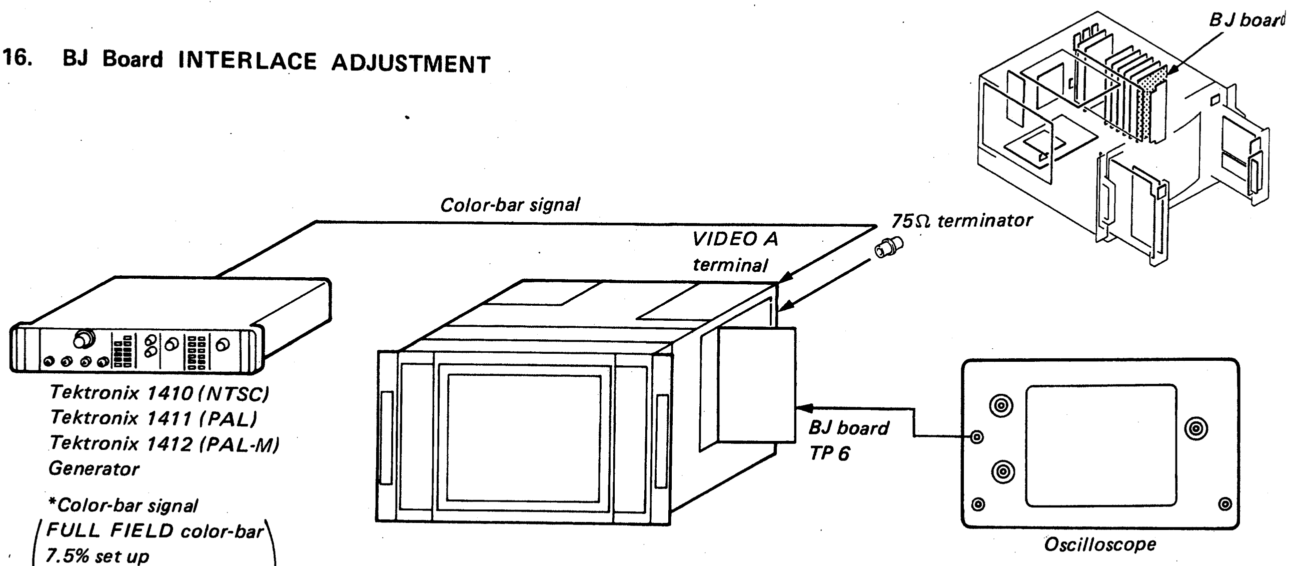
BC board



BG board



16. BJ Board INTERLACE ADJUSTMENT


B J board
Color-bar signal
VIDEO A
terminal
75Ω terminator
BJ board
TP 6
Oscilloscope

Tektronix 1410 (NTSC)
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator

**Color-bar signal*
FULL FIELD color-bar
7.5% set up
100 IRE
75% AMPL

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP6 on the BJ board.
3. Adjust RV6 to obtain the waveform on the oscilloscope as shown in Fig. 16-1.

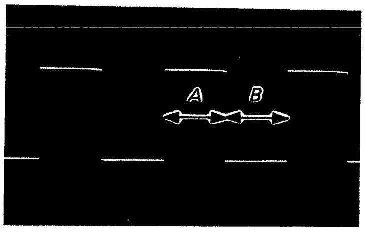
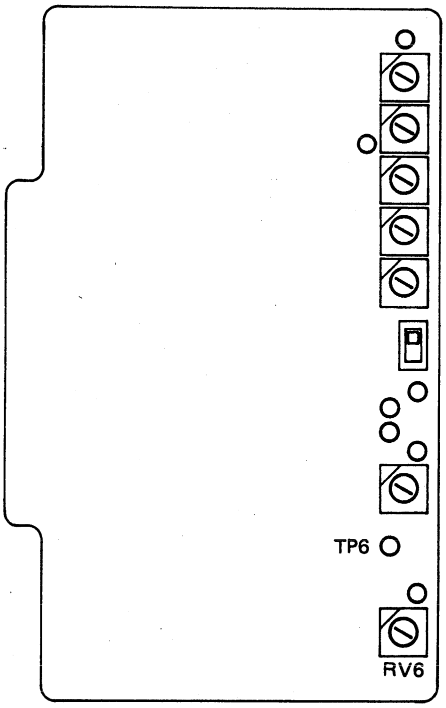
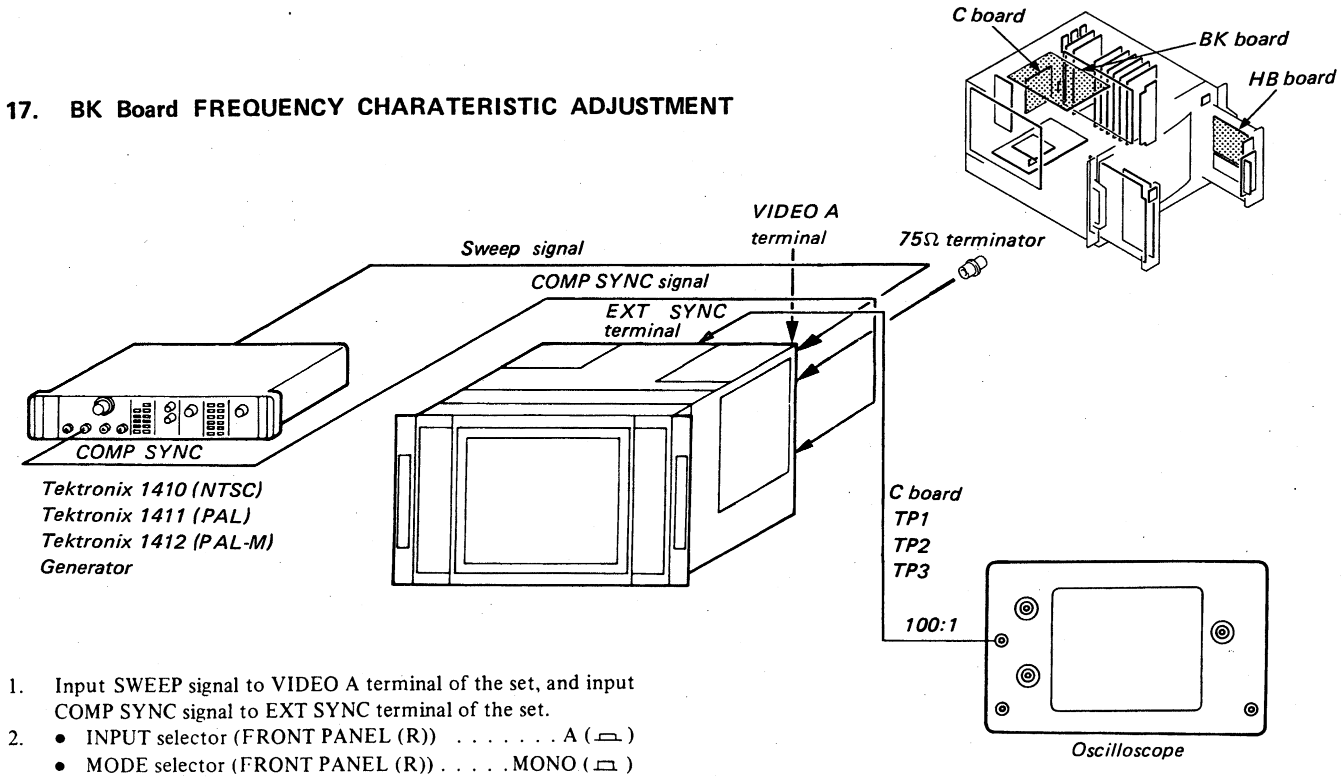


Fig. 16-1

BJ board



17. BK Board FREQUENCY CHARATERISTIC ADJUSTMENT


C board
BK board
HB board
VIDEO A terminal
75Ω terminator
Sweep signal
COMP SYNC signal
EXT SYNC terminal
COMP SYNC
Tektronix 1410 (NTSC)
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
C board
TP1
TP2
TP3
100:1
Oscilloscope

1. Input SWEEP signal to VIDEO A terminal of the set, and input COMP SYNC signal to EXT SYNC terminal of the set.
2. - INPUT selector (FRONT PANEL (R)) . . . . A (▭)
   - MODE selector (FRONT PANEL (R)) . . . . . MONO (▭)
   - FILTER SW. (HB board S8) . . . . OFF
3. Connect an oscilloscope to the TP1 on the C board.
   *Probe: 100:1
4. Adjust CV101 and RV101 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.
5. Connect an oscilloscope to the TP2 on the C board.
6. Adjust CV201 and RV201 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.
7. Connect an oscilloscope to the TP3 on the C board.
8. Adjust CV301 and RV301 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.

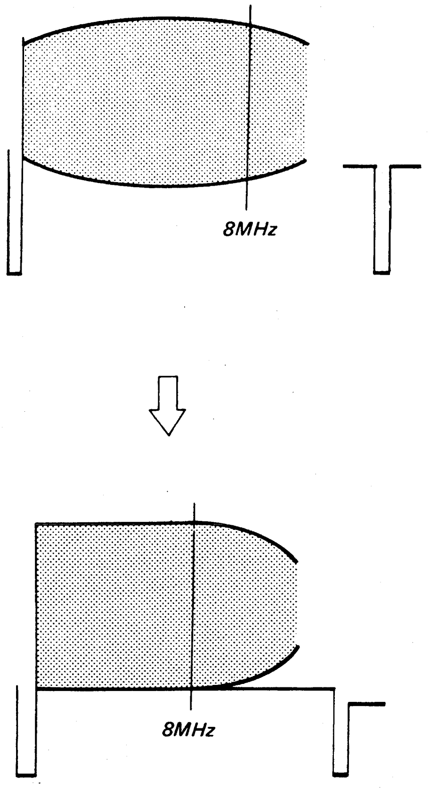
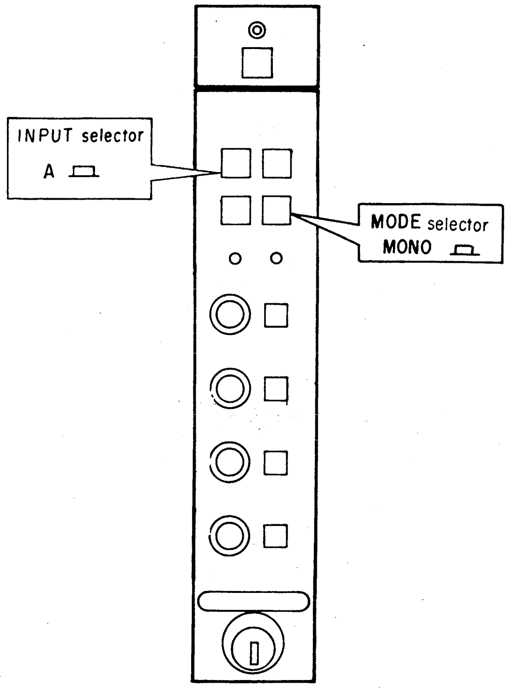
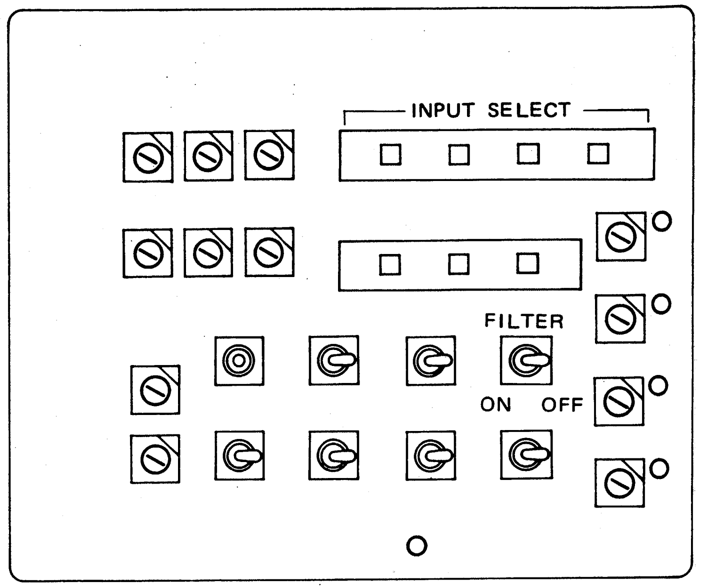


Fig. 17-1

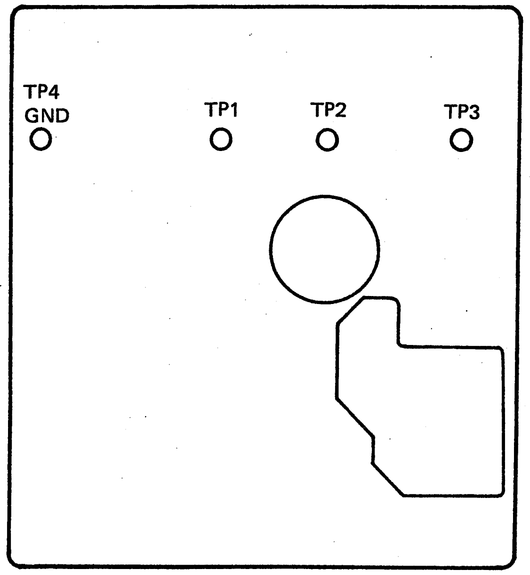
FRONT PANEL (R)


INPUT selector
A ▭
MODE selector
MONO ▭

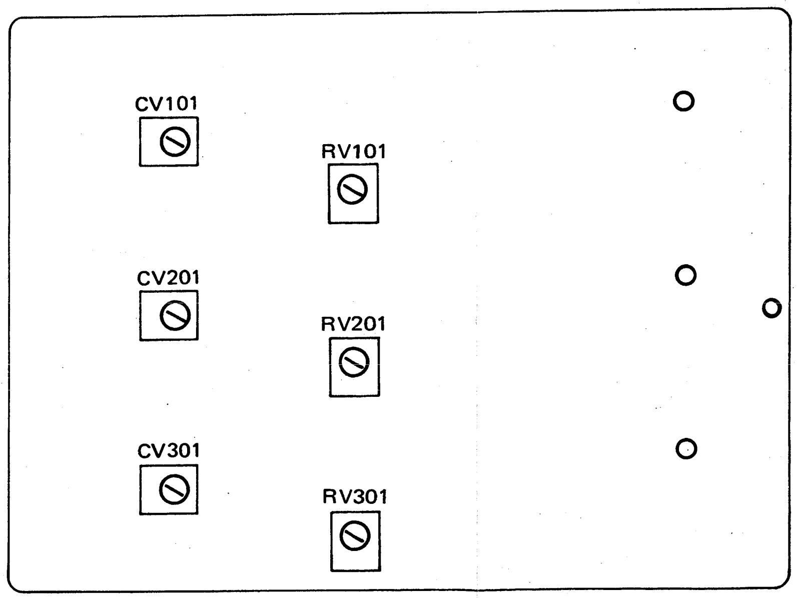
HB board


INPUT SELECT
FILTER
ON
OFF

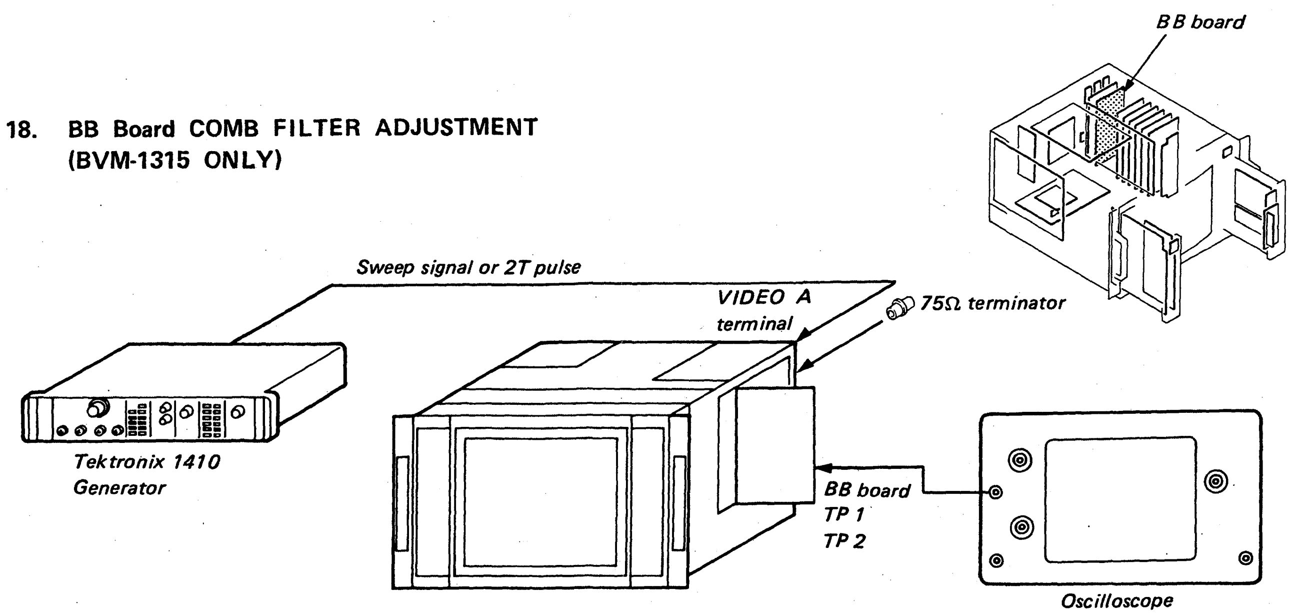
C board


TP4
GND
TP1
TP2
TP3

BK board


CV101
RV101
CV201
RV201
CV301
RV301

18. BB Board COMB FILTER ADJUSTMENT (BVM-1315 ONLY)


BB board
Sweep signal or 2T pulse
VIDEO A terminal
75Ω terminator
Tektronix 1410 Generator
BB board
TP 1
TP 2
Oscilloscope

12.5MHz fo GAIN ADJUSTMENT

1. Input 2T PULSE signal to VIDEO A terminal of the set.
    - COMB/TRAP filter selector (FRONT PANEL (L)) . . . . COMB (▭)
2. Connect an oscilloscope to the TP1 of BB board.
3. Adjust CV101 of BB board so that the output waveform is maximum.
4. Adjust L101 of BB board so that the output waveform is maximum.
5. Adjust to 1.2Vp-p with CV101 of BB board as shown in Fig. 18-1.

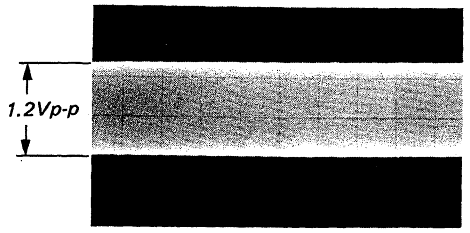
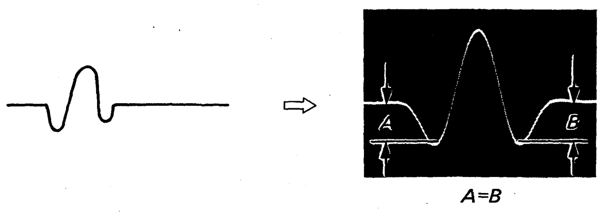


Fig. 18-1

BPF ADJUSTMENT

1. Input 2T PULSE signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BB board.
3. Adjust RV1 of BB board so that the output waveform to the same as shown in Fig. 18-2.



A=B

Fig. 18-2

4. Adjust RV2 of BB board so that the output waveform as shown in Fig. 18-3.

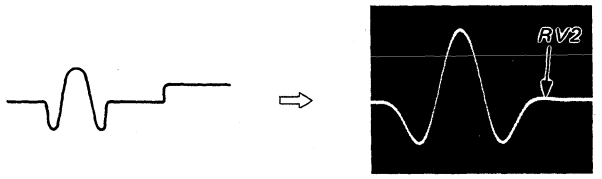
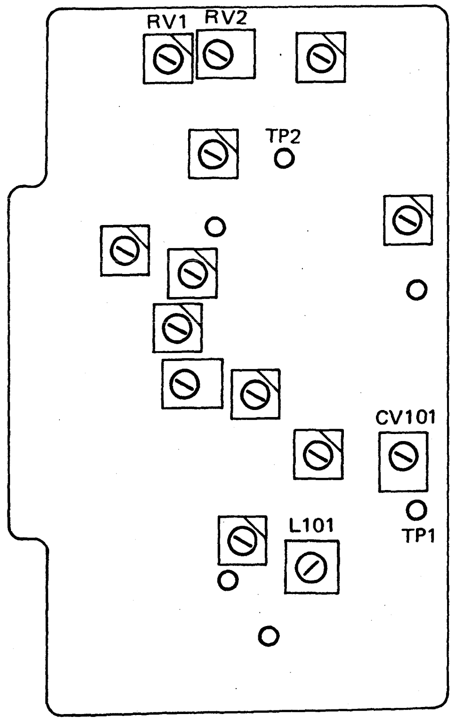


Fig. 18-3

BB board


RV1
RV2
TP2
CV101
L101
TP1

5. Adjust steps 3. and 4. while doing tracking.
6. Input SWEEP (20MHz) signal to the VIDEO A terminal of the set.
7. Adjust CV1 of BB board so that the output waveform as shown in Fig. 18-4.

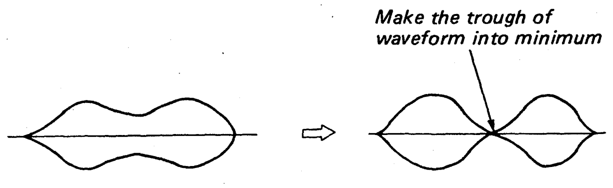
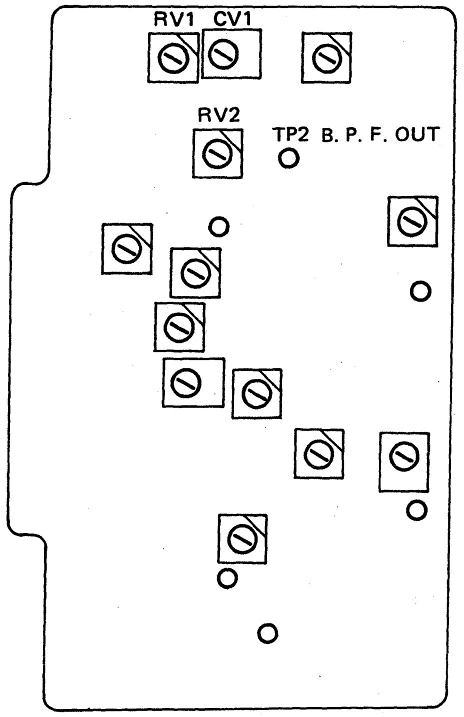


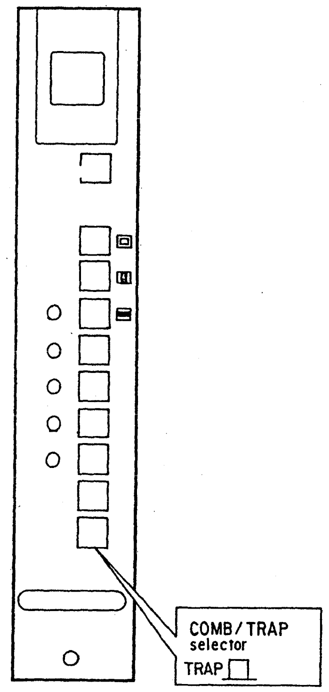
Fig. 18-4

8. Input 2T PULSE signal to VIDEO A terminal of the set, and confirm that waveform 3 and 4 are not distorted.
9. Switch sweep signal and 2T PULSE signal and confirm that the waveforms in steps (3), (4) and (7) are not OFF.

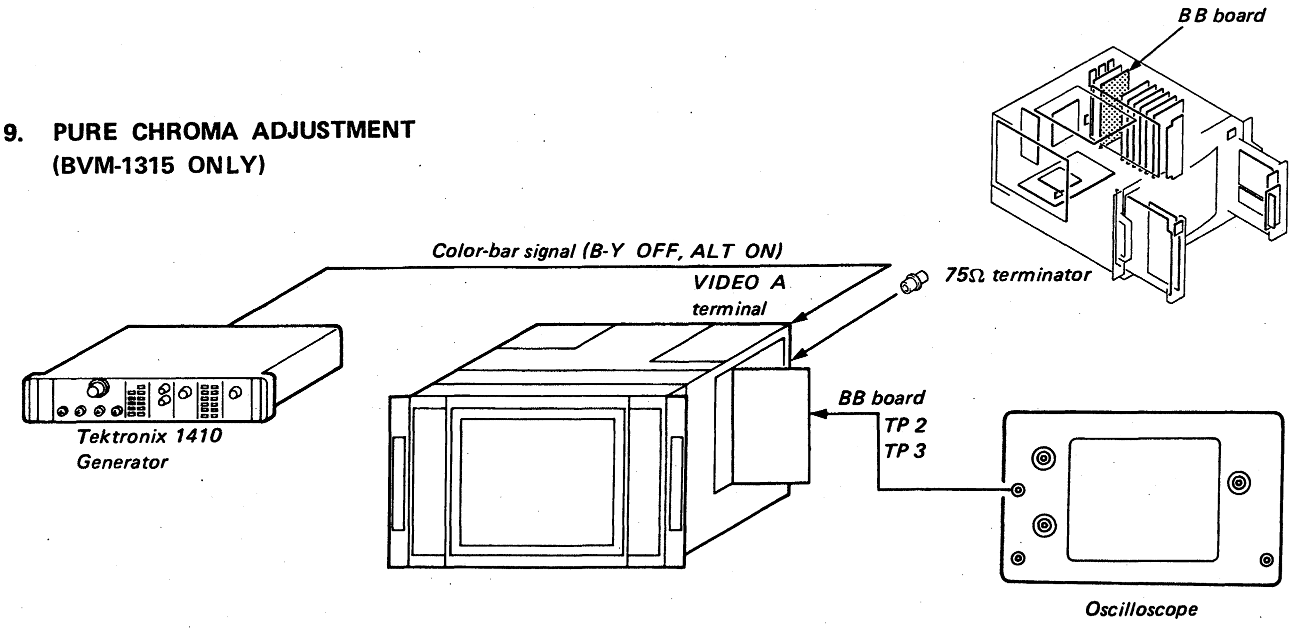
BB board


RV1
CV1
RV2
TP2 B. P. F. OUT

FRONT PANEL (L)


COMB/TRAP
selector
TRAP

19. PURE CHROMA ADJUSTMENT (BVM-1315 ONLY)


B B board
Color-bar signal (B-Y OFF, ALT ON)
VIDEO A
terminal
75Ω terminator
Tektronix 1410
Generator
BB board
TP 2
TP 3
Oscilloscope

1. Input color-bar signal (B-Y OFF, ALT ON) to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP3 of BB board, the RV101 of BB board at the fully clockwise position.
3. Adjust RV3 and RV4 of BB board so that 3.58MHz component is minimum as shown in Fig.19-1.

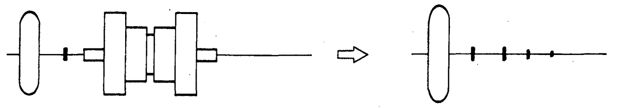


Fig. 19-1

4. Input SWEEP (20MHz) signal to the VIDEO A terminal of the set.
5. Adjust L2 of BB board so that the output waveform as shown Fig. 19-2.

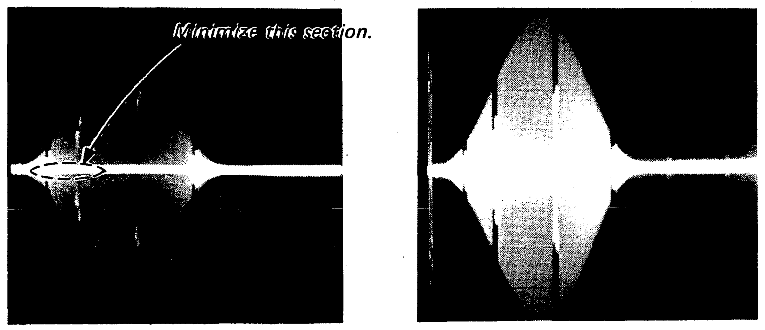
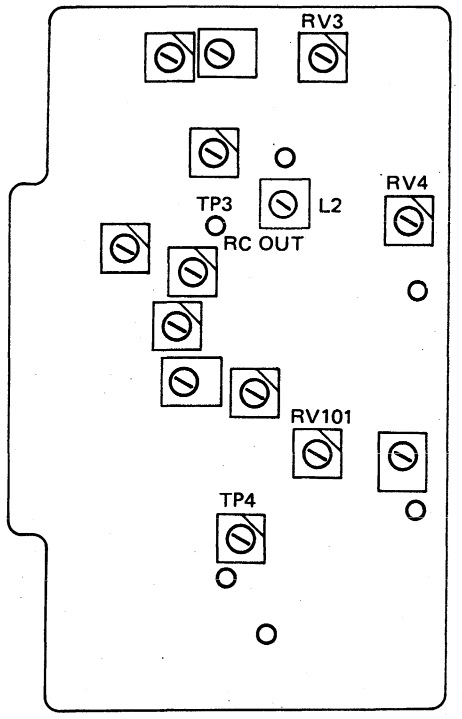

Minimize this section.

Fig. 19-2

6. Confirm the waveform of item 3.

BB board


RV3
TP3
L2
RV4
RC OUT
RV101
TP4

20. PURE Y ADJUSTMENT (BVM-1315 ONLY)

1. Input SWEEP (20MHz) signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP4 of BB board.
3. Set RV9 of BB board at the fully counterclockwise position.
4. Adjust amplitude near to 1Vp-p with RV8.
5. Adjust CV2 of BB board so that the output waveform becomes flat in range of 0 to 10MHz as shown in Fig. 20-1.

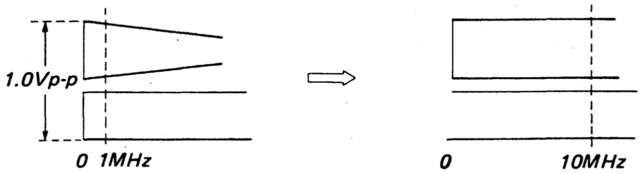

1.0Vp-p
0 1MHz
0
10MHz

Fig. 20-1

6. Input color-bar signal to the VIDEO A terminal of the set.
7. Adjust RV6 and RV7 of BB board so that 3.58MHz component is minimum as shown in Fig. 20-2.

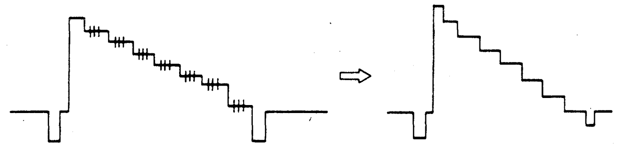
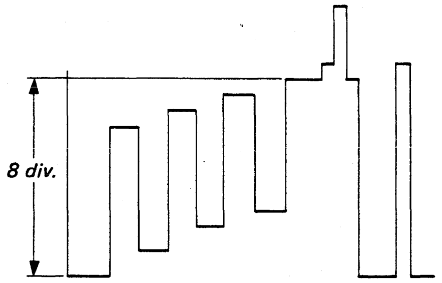


Fig. 20-2

21. PURE Y.C GAIN ADJUSTMENT (BVM-1315 ONLY)

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP301 of BH board.
3. COMB/TRAP filter selector . . . . TRAP (▭)
4. Set the VOLT/DIV of the oscilloscope to variable and adjust the waveform to 8 DIV as shown in Fig. 21-1.



TP301 B OUT

Fig. 21-1

5. COMB/TRAP filter selector . . . . COMB (▭)
6. Adjust RV8 of BB board so that the output waveform is 8 DIV as shown in Fig. 21-1.
7. Adjust RV5 of BB board so that the output waveform becomes flat as shown in Fig. 21-2.

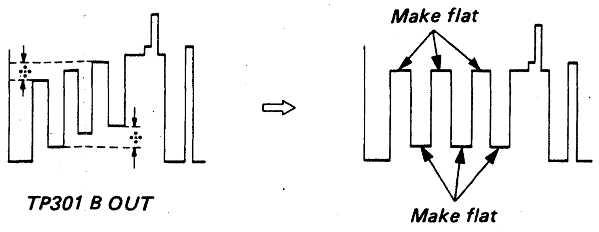
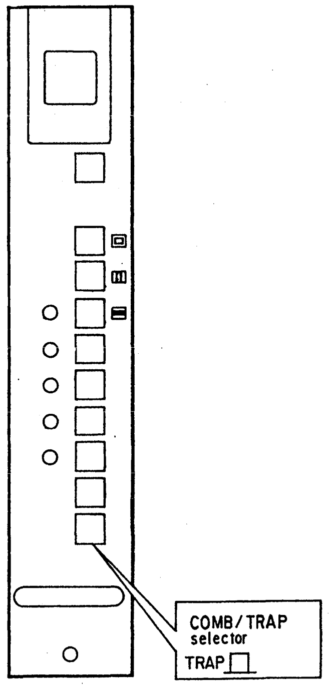

Make flat
TP301 B OUT
Make flat

Fig. 21-2

FRONT PANEL (L)


COMB/TRAP
selector
TRAP

20. PURE Y ADJUSTMENT (BVM-1315 ONLY)

1. Input SWEEP (20MHz) signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP4 of BB board.
3. Set RV9 of BB board at the fully counterclockwise position.
4. Adjust amplitude near to 1Vp-p with RV8.
5. Adjust CV2 of BB board so that the output waveform becomes flat in range of 0 to 10MHz as shown in Fig. 20-1.

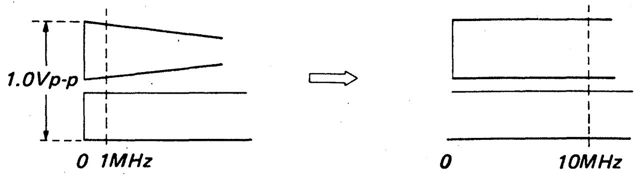


Fig. 20-1

6. Input color-bar signal to the VIDEO A terminal of the set.
7. Adjust RV6 and RV7 of BB board so that 3.58MHz component is minimum as shown in Fig. 20-2.

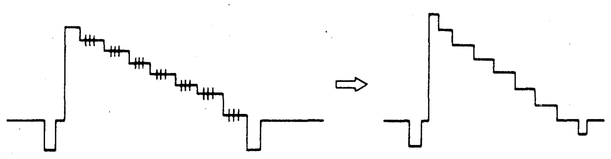


Fig. 20-2

21. PURE Y.C GAIN ADJUSTMENT (BVM-1315 ONLY)

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP301 of BH board.
3. COMB/TRAP filter selector . . . . TRAP (▭)
4. Set the VOLT/DIV of the oscilloscope to variable and adjust the waveform to 8 DIV as shown in Fig. 21-1.

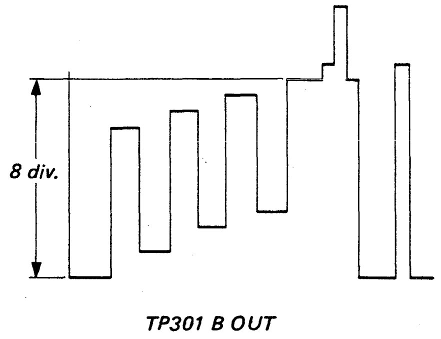


Fig. 21-1

5. COMB/TRAP filter selector . . . . COMB (▭)
6. Adjust RV8 of BB board so that the output waveform is 8 DIV as shown in Fig. 21-1.
7. Adjust RV5 of BB board so that the output waveform becomes flat as shown in Fig. 21-2.

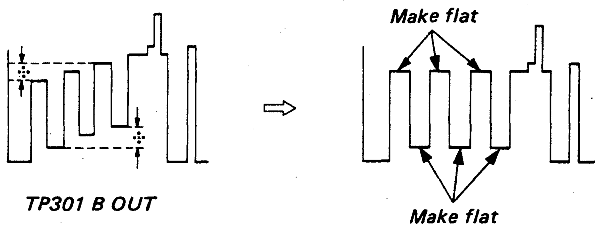
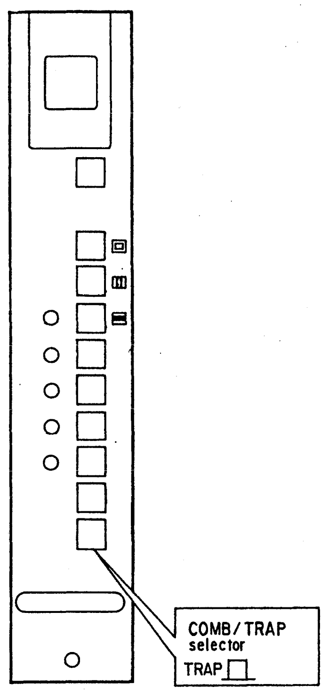
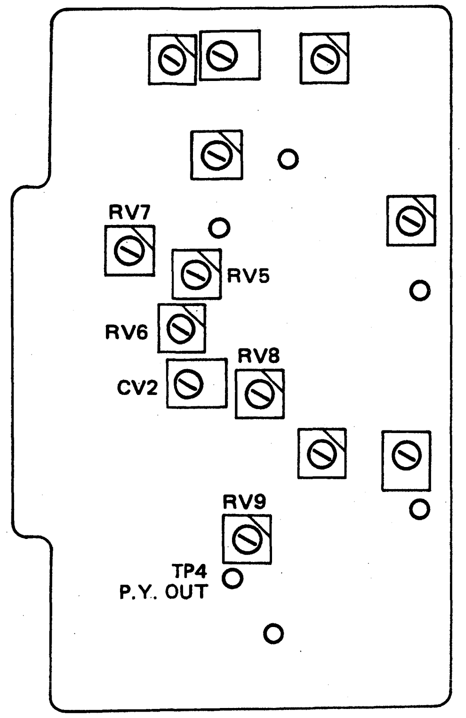


Fig. 21-2

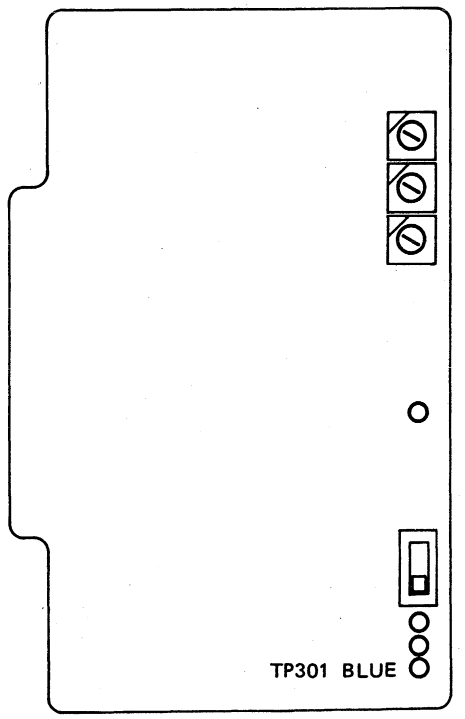
FRONT PANEL (L)



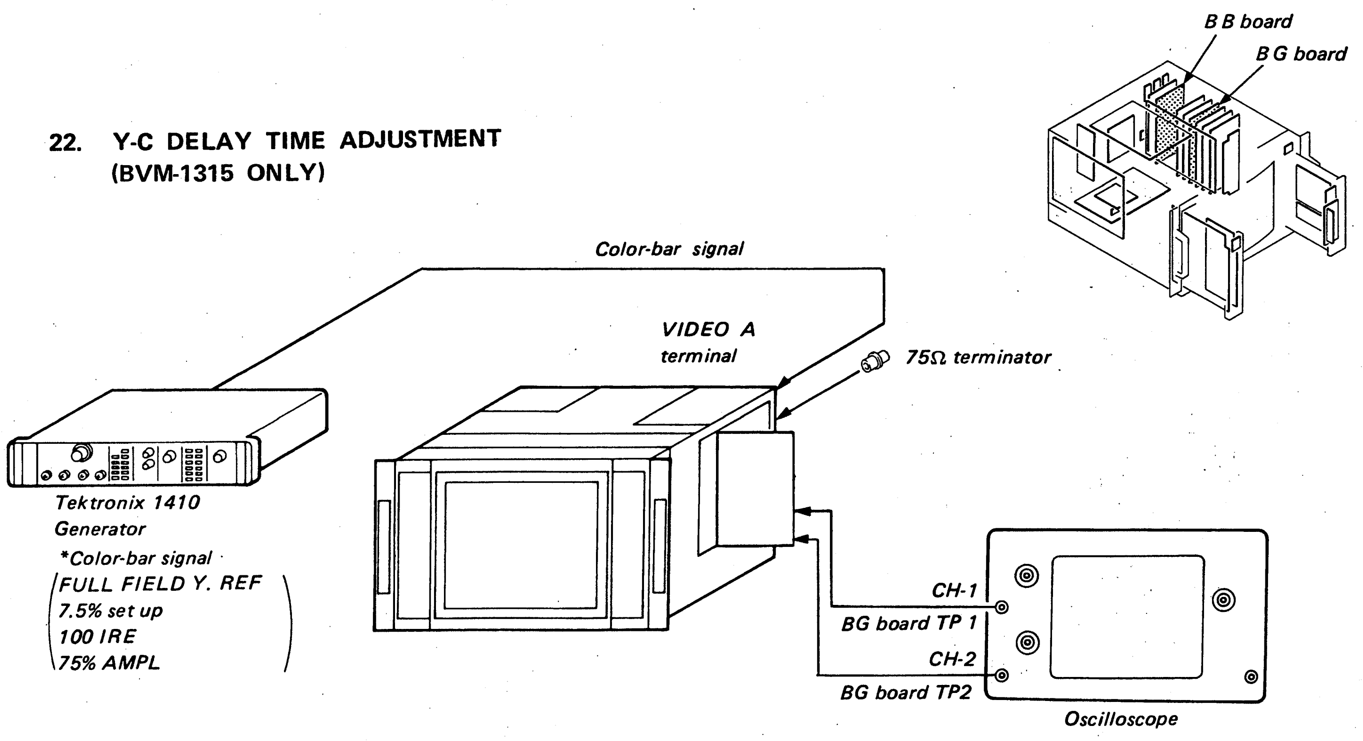
BB board



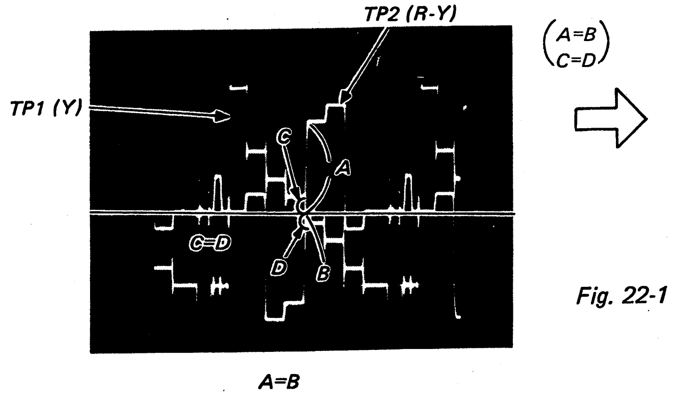
BH board



22. Y-C DELAY TIME ADJUSTMENT (BVM-1315 ONLY)


B B board
B G board
Color-bar signal
VIDEO A terminal
75Ω terminator
Tektronix 1410 Generator
*Color-bar signal
FULL FIELD Y. REF
7.5% set up
100 IRE
75% AMPL
CH-1
BG board TP 1
CH-2
BG board TP2
Oscilloscope

1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV9 of BB board so that the output waveform as shown in Fig. 22-1.


TP2 (R-Y)
TP1 (Y)
A
B
C
D
C=D
A=B
A=B
C=D

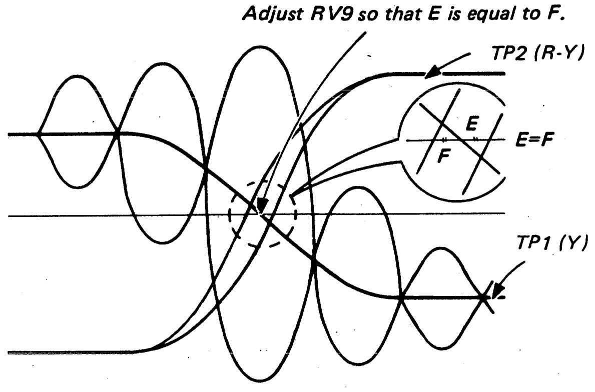
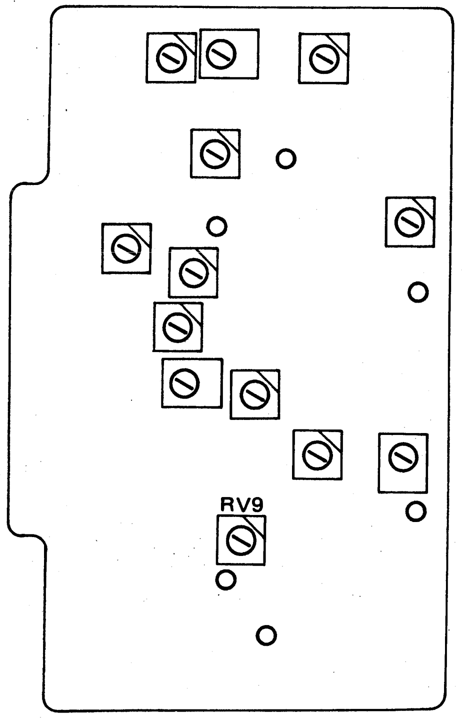
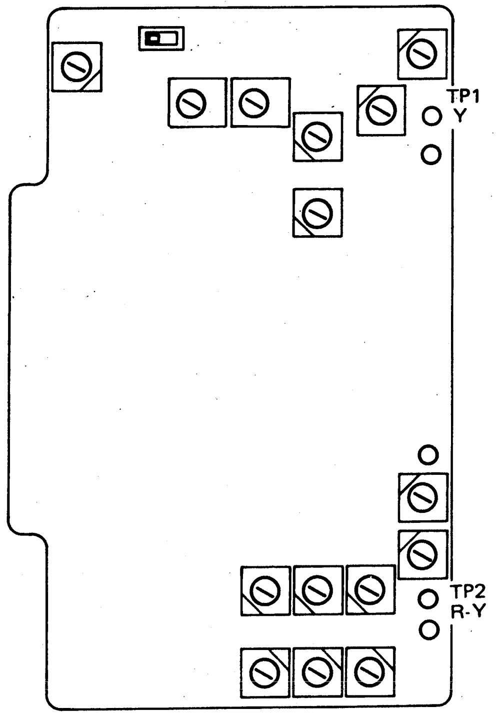

Adjust RV9 so that E is equal to F.
TP2 (R-Y)
E
F
E=F
TP1 (Y)

Fig. 22-1

BB board



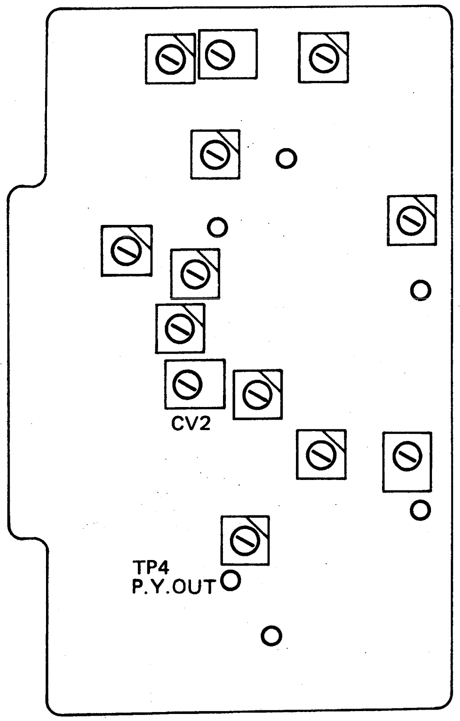
BG board



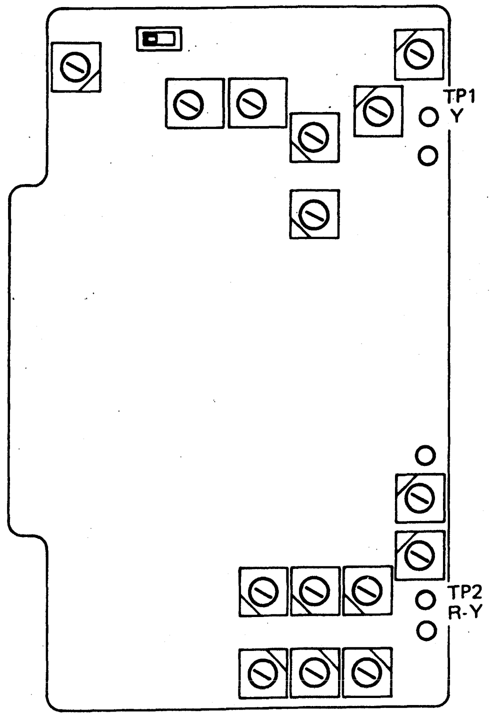
FREQUENCY CHARACTERISTIC CONFIRMATION

1. Input SWEEP signal (20MHz) to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Confirm the output waveform becomes flat in a range of 0 to 10MHz.
4. If not, readjust with CV2 of BB board.

BB board


CV2
TP4
P.Y.OUT

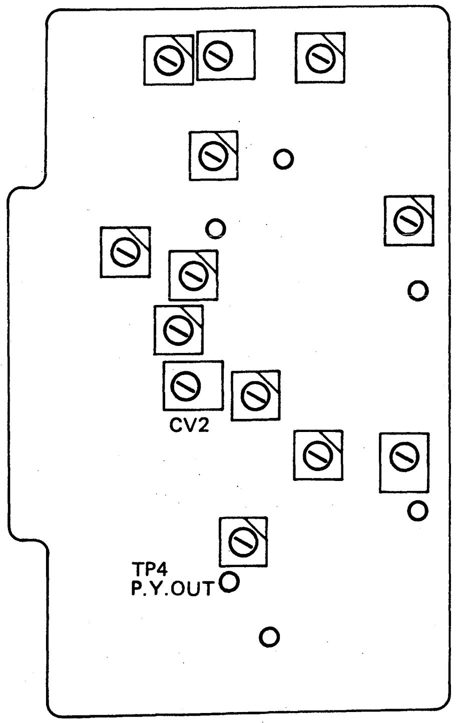
BG board



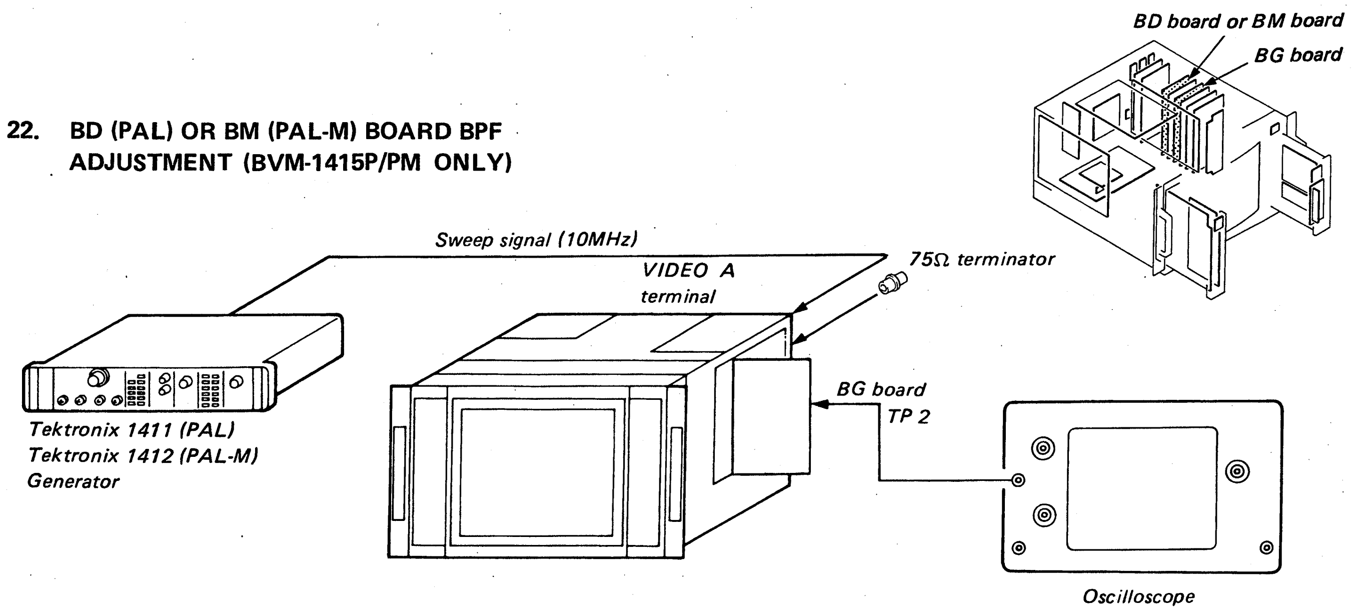
FREQUENCY CHARACTERISTIC CONFIRMATION

1. Input SWEEP signal (20MHz) to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Confirm the output waveform becomes flat in a range of 0 to 10MHz.
4. If not, readjust with CV2 of BB board.

BB board



22. BD (PAL) OR BM (PAL-M) BOARD BPF ADJUSTMENT (BVM-1415P/PM ONLY)


BD board or BM board
BG board
Sweep signal (10MHz)
VIDEO A terminal
75Ω terminator
BG board
TP 2
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
Oscilloscope

* Set the PAL switch of the BVM-1410P or 1410PM to the S position.

1. Input SWEEP signal (10MHz) to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the V/div of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 22-1.

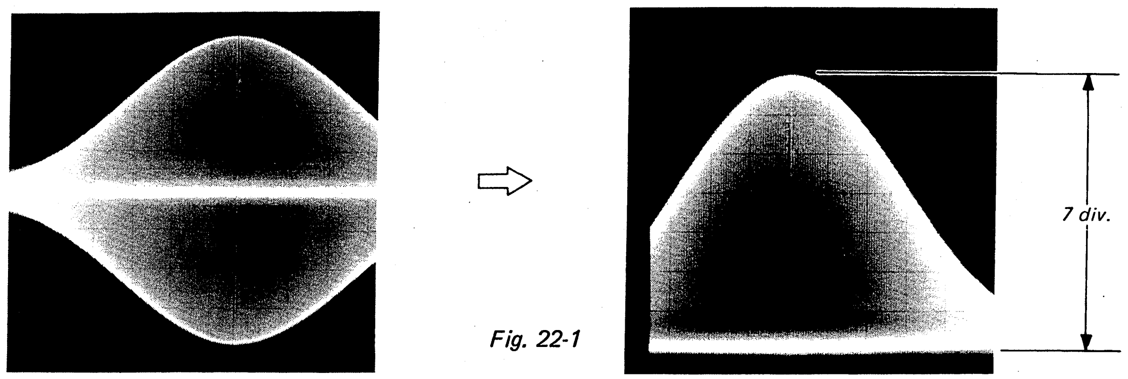
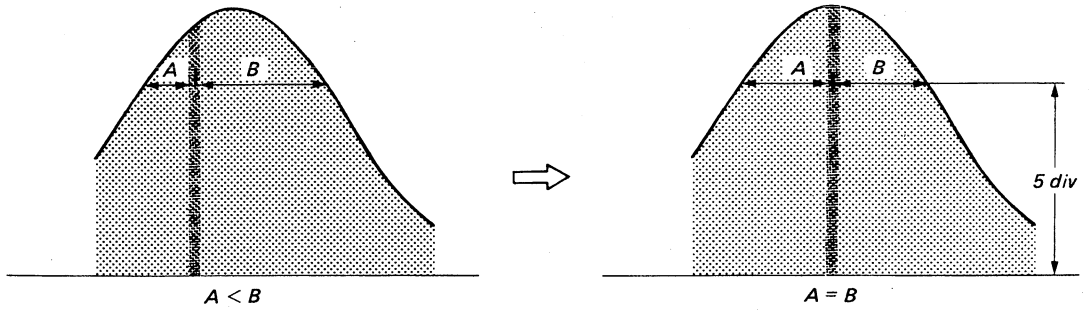


Fig. 22-1

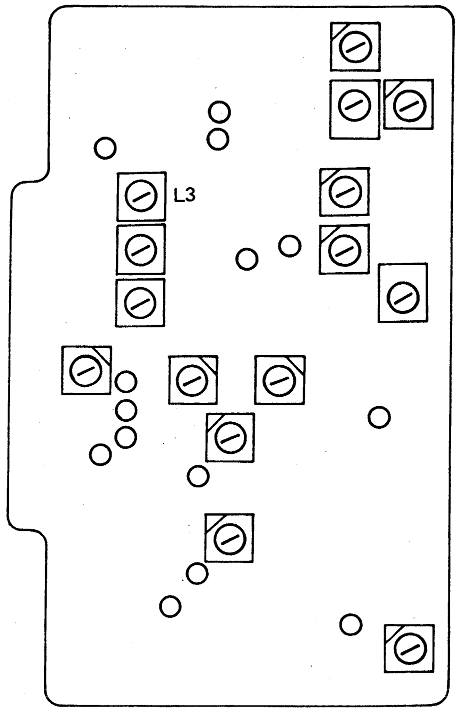
4. Adjust L3 on the BD board so that A is equal to B as shown in Fig. 22-2.


A
B
A < B
A
B
5 div
A = B

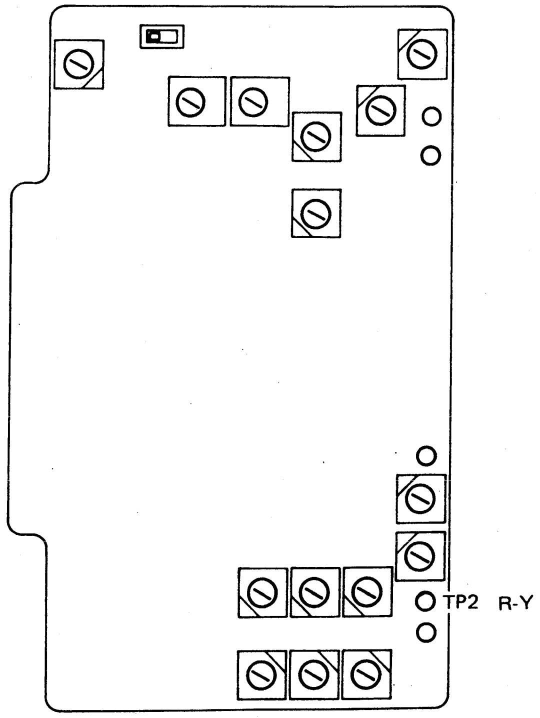
A is equal to B when the amplitude is 5 div.

Fig. 22-2

BD board or BM board



BG board



23. BD (PAL) OR BM (PAL-M) BOARD PHASE SHIFT ADJUSTMENT (BVM-1415P/PM ONLY)

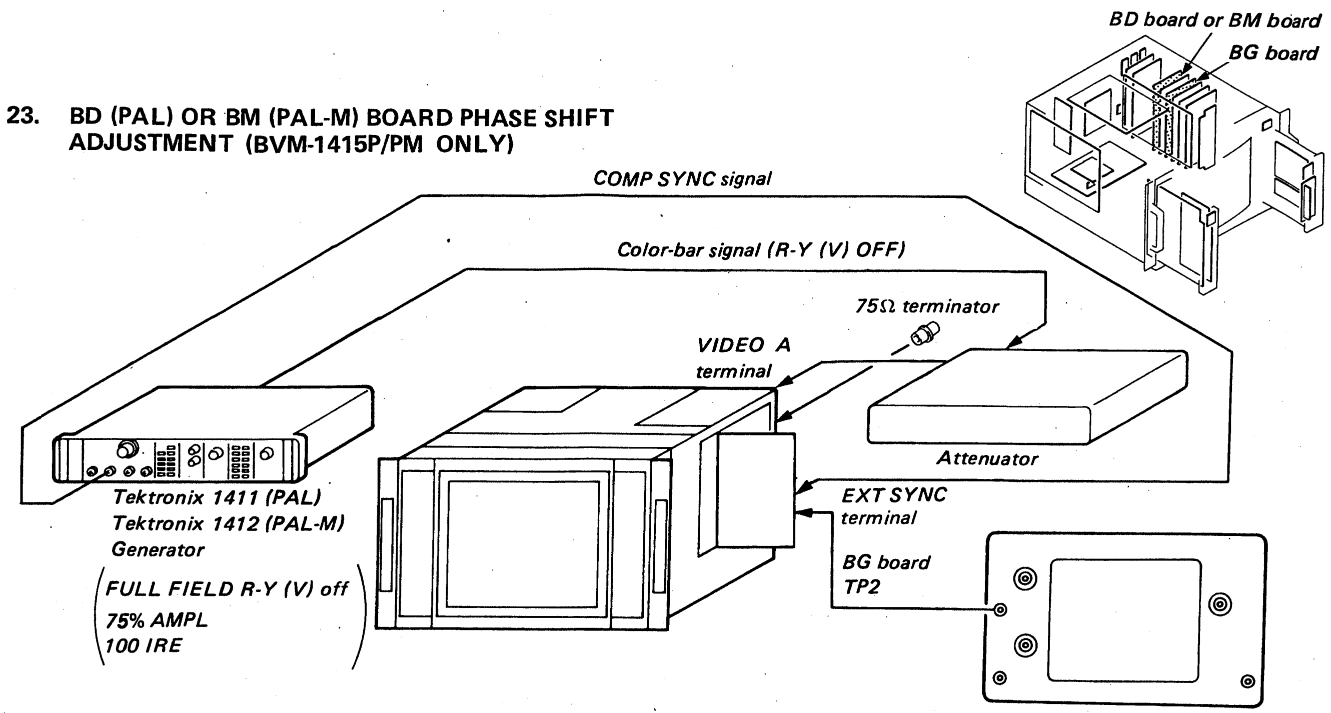

BD board or BM board
BG board
COMP SYNC signal
Color-bar signal (R-Y (V) OFF)
75Ω terminator
VIDEO A terminal
Attenuator
EXT SYNC terminal
BG board TP2
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
FULL FIELD R-Y (V) off
75% AMPL
100 IRE
Oscilloscope

Fig. 23-1

* Set the PAL switch of the BVM-1410P or 1410PM to the S position and RV2, CV1, CV2 on the BD or BM board to mechanical midposition.

1. Complete the connection as shown in Fig. 23-1.
    - INPUT selector (FRONT PANEL (R)) . . . A (_⊓_)
    - SYNC selector (FRONT PANEL (R)) . . . EXT (_⊓_)
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the waveform flat with the PHASE control of front panel (R) as shown in Fig. 23-2.

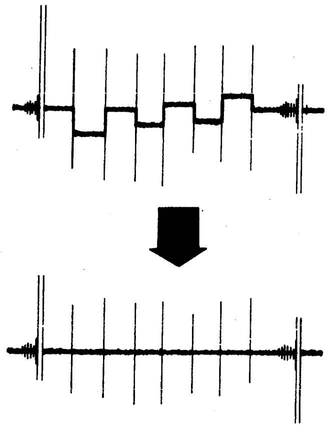
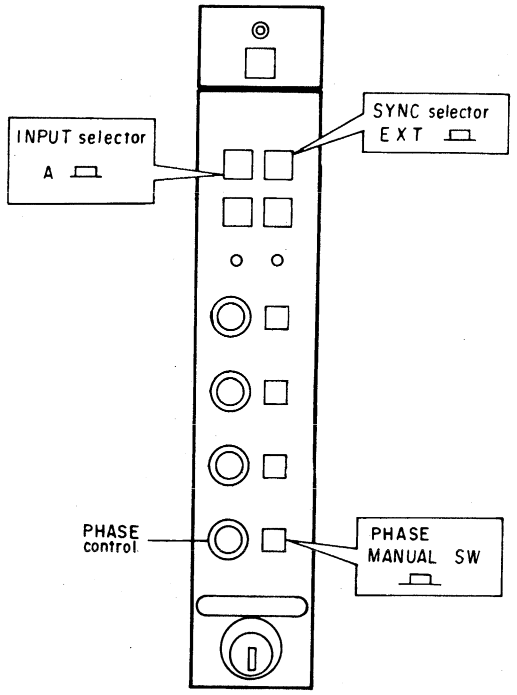


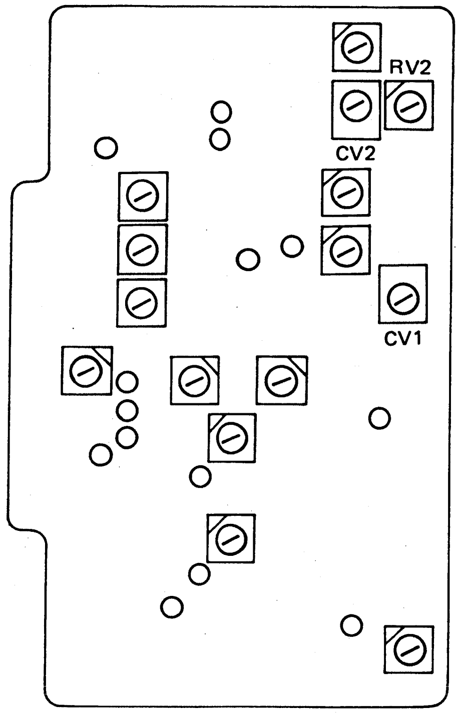
Fig. 23-2

4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV2 on the BD or BM board so that the output waveform becomes flat as shown in Fig. 23-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.

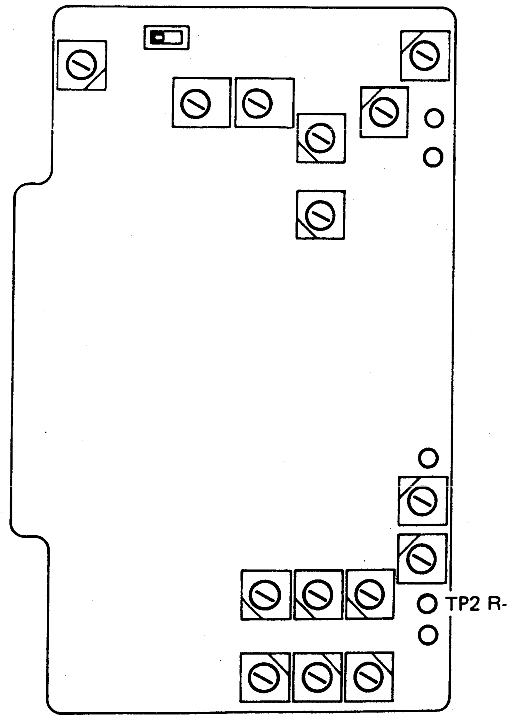
FRONT PANEL (R)


INPUT selector
A _⊓_
SYNC selector
EXT _⊓_
PHASE control
PHASE MANUAL SW
_⊓_

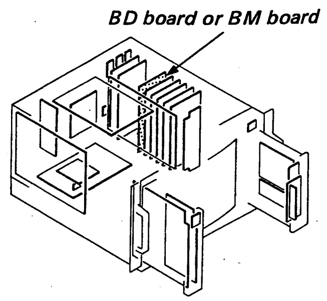
BD board or BM board

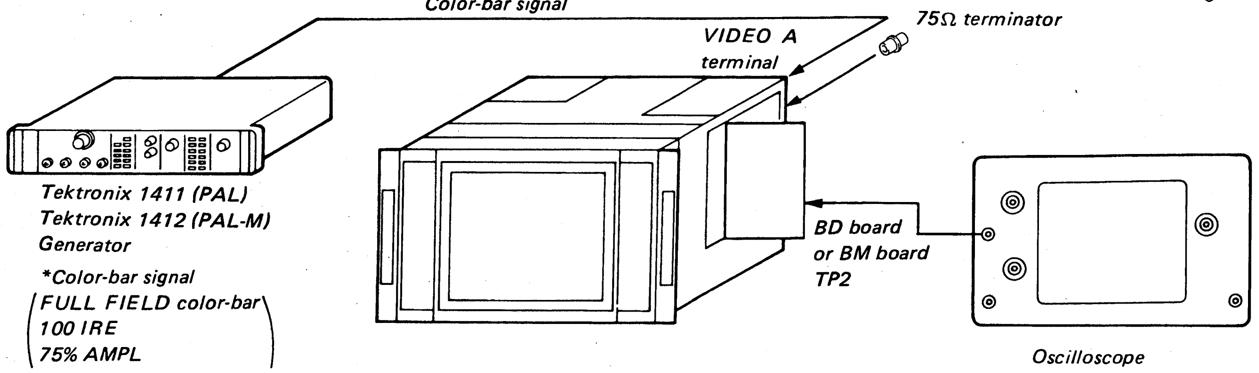


BG board



24. BD BOARD 4.43MHz (PAL) or BM BOARD 3.58MHz (PAL-M) fo ADJUSTMENT (BVM-1415P/PM ONLY)


BD board or BM board


Color-bar signal
VIDEO A terminal
75Ω terminator
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
*Color-bar signal
FULL FIELD color-bar
100 IRE
75% AMPL
BD board or BM board TP2
Oscilloscope

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BD or BM board.
3. Short-circuit between TP11, 12 of BD or BM board with a jumper wire.
4. Adjust CV2 of BD or BM board so that the output waveform is shifted slowly as shown in Fig. 24-1.
5. Turn off the power of this monitor, and disconnect TP11, 12 of BD or BM board.

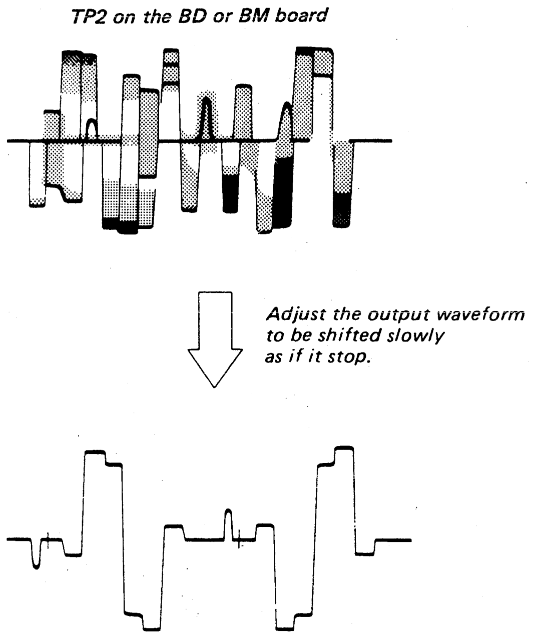
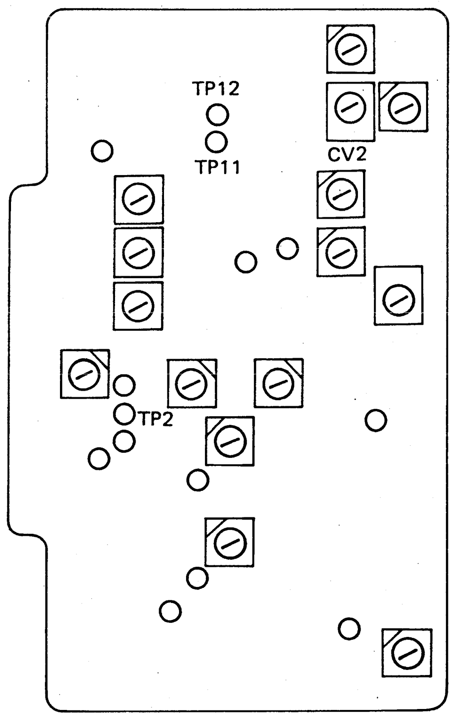

TP2 on the BD or BM board
Adjust the output waveform to be shifted slowly as if it stop.

Fig. 24-1

BD board or BM board


TP12
TP11
CV2
TP2

25. BD BOARD (PAL) or BM BOARD (PAL-M) COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-1415P/PM ONLY)

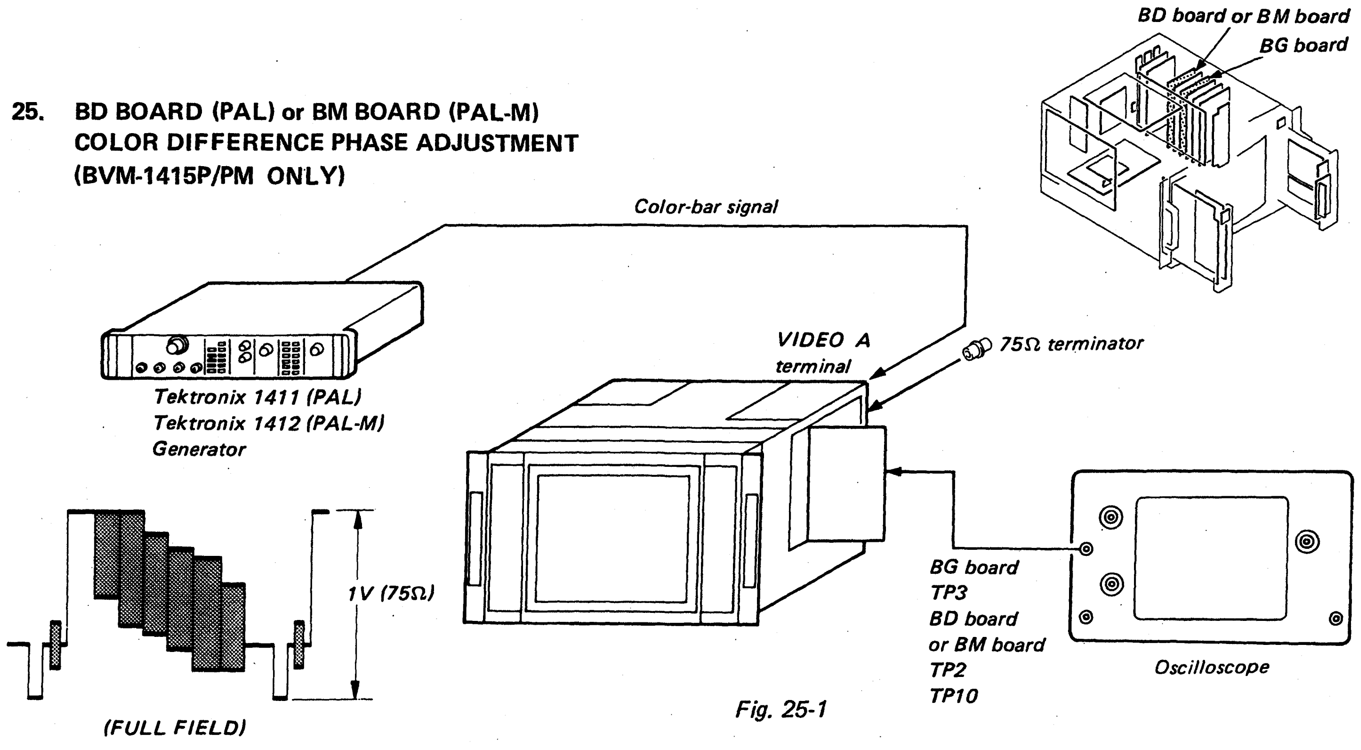

BD board or BM board
BG board
Color-bar signal
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
VIDEO A terminal
75Ω terminator
1 V (75Ω)
(FULL FIELD)
BG board
TP3
BD board
or BM board
TP2
TP10
Oscilloscope

Fig. 25-1

1. Complete the connections as shown in Fig. 25-1.
2. Turn on the power of this monitor. Set the INPUT switch to the A position, the SYNC switch to the INT position, and the PAL switch to the S position.

B-Y System Adjustment

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the U (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV8 on the BD or BM board so that the output waveform is flat. (See Fig. 25-2.)

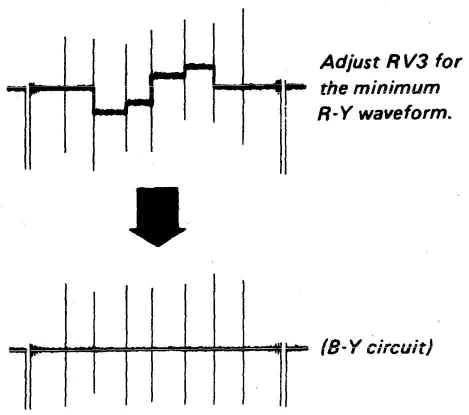

Adjust RV3 for the minimum R-Y waveform.
(B-Y circuit)

Fig. 25-2

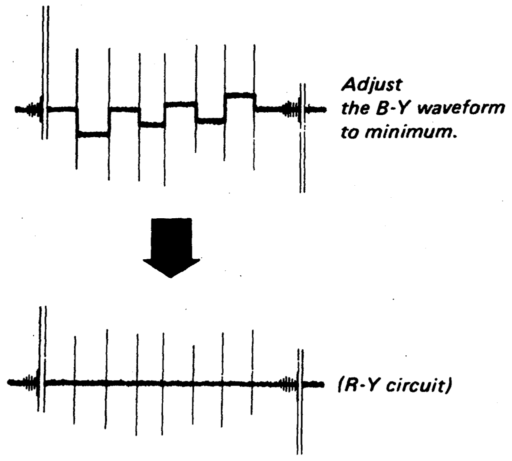

Adjust the B-Y waveform to minimum.
(R-Y circuit)

Fig. 25-3

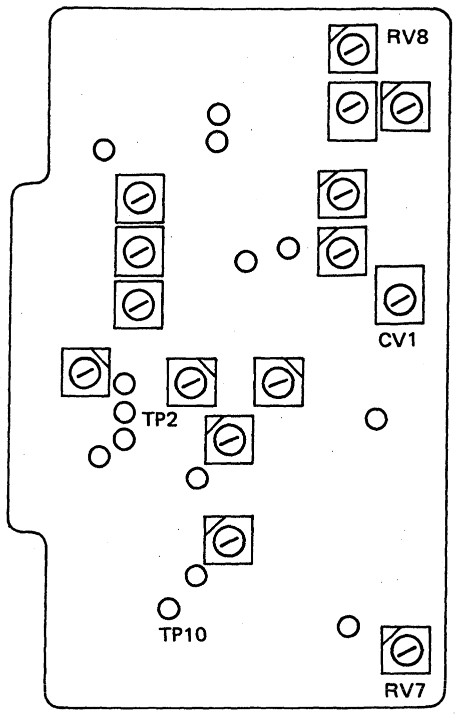
Quad Adjustment

5. Connect the oscilloscope probe to TP2 on the BD or BM board. Turn on the U signal of the signal generator, and turn off the V (R-Y) signal. Then adjust CV1 on the BD or BM board so that the output waveform is flat. (See Fig. 25-3.)
6. Repeat the steps 3 to 6.

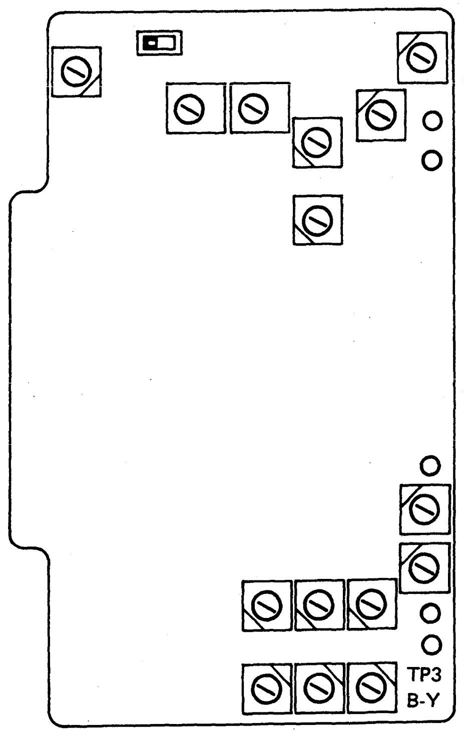
PAL-D Phase Adjustment

7. Set the PAL switch to the D position and turn on the V signal of the signal generator, and turn off U signal.
8. Connect the oscilloscope probe to TP10 on the BD or BM board.
9. Adjust RV7 on the BD board so that the output waveform is flat. (See Fig. 25-2.)
10. Finally, perform the adjustments of 3 and 4 by directly mounting the BD or BM board to the set, without using the extension board.

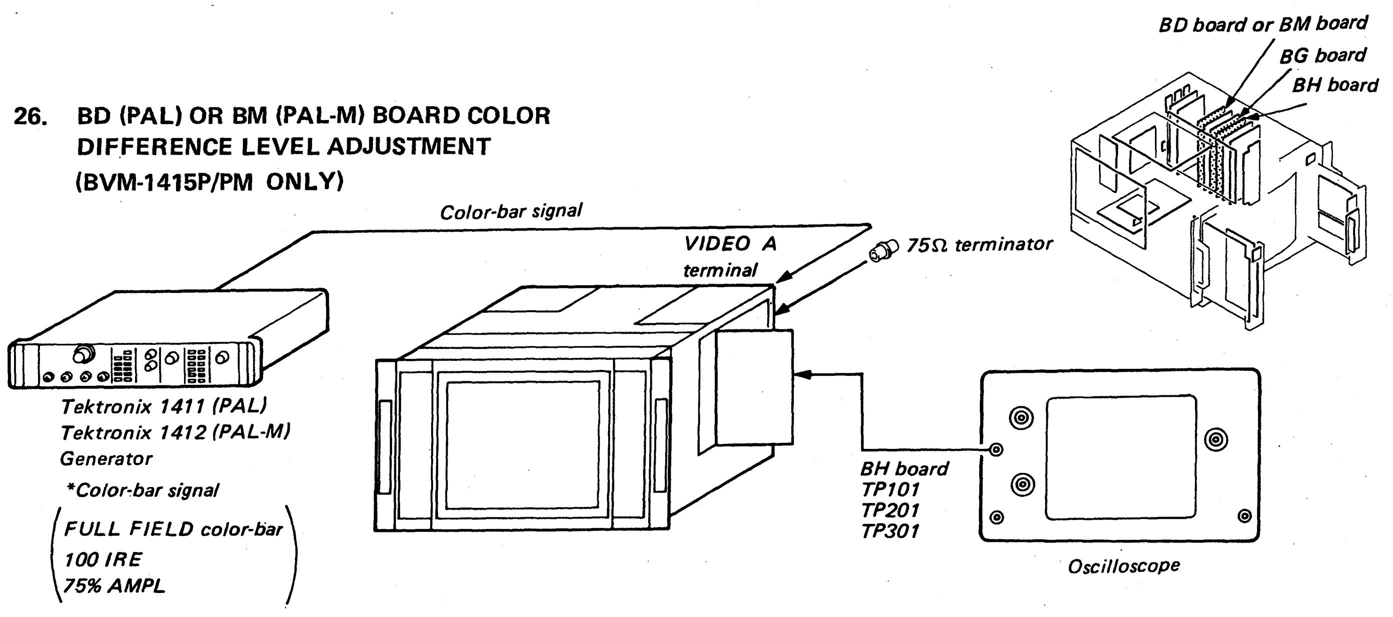
BD board or BM board


RV8
CV1
TP2
TP10
RV7

BG Board

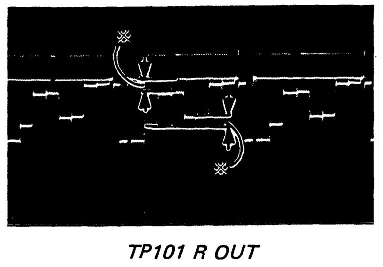


26. BD (PAL) OR BM (PAL-M) BOARD COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-1415P/PM ONLY)


Color-bar signal
VIDEO A terminal
75Ω terminator
BD board or BM board
BG board
BH board
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
*Color-bar signal
FULL FIELD color-bar
100 IRE
75% AMPL
BH board
TP101
TP201
TP301
Oscilloscope

* Set the PAL switch of the BVM-1410P or 1410PM to the S position.

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP101 of BH board.
3. Adjust RV3 of BD or BM board so that the level with ✱ is flat as shown in Fig. 26-1.



** Adjust the levels with ✱ to be flat respectively using RV3 of BD or BM board.*

Fig. 26-1

4. Connect an oscilloscope to the TP301 of BH board.
5. Adjust RV4 of BD or BM board so that the output waveform as shown in Fig. 26-2.

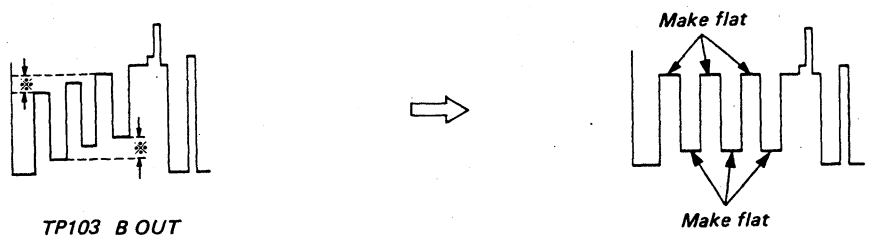

TP103 B OUT
Make flat
Make flat

Fig. 26-2

6. Connect an oscilloscope to the TP201 of BH board.
7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 26-3.

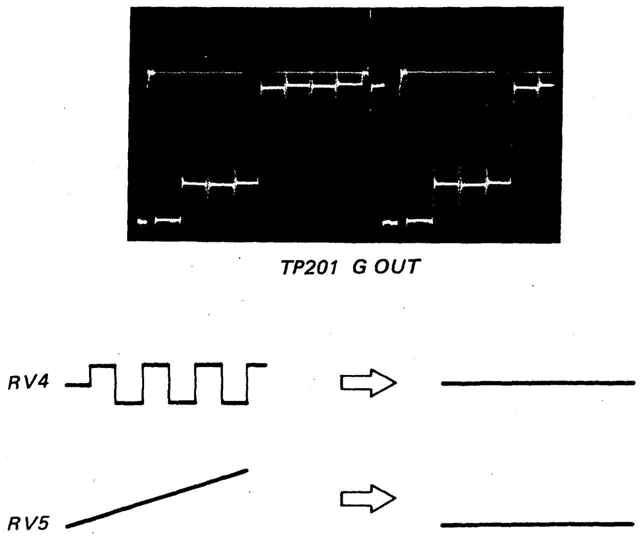
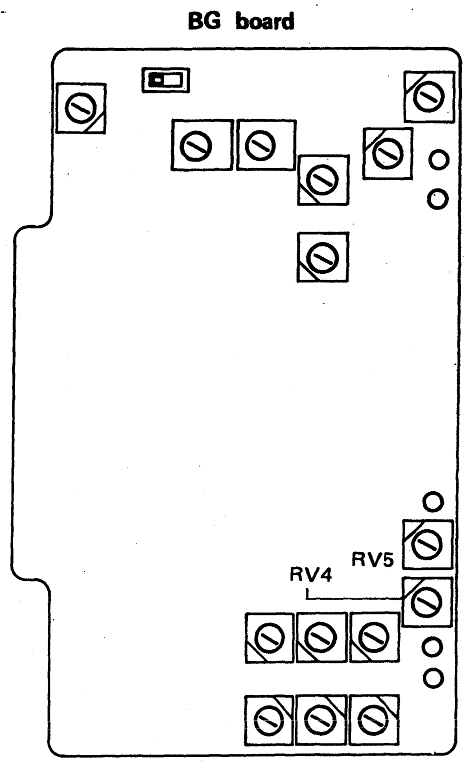
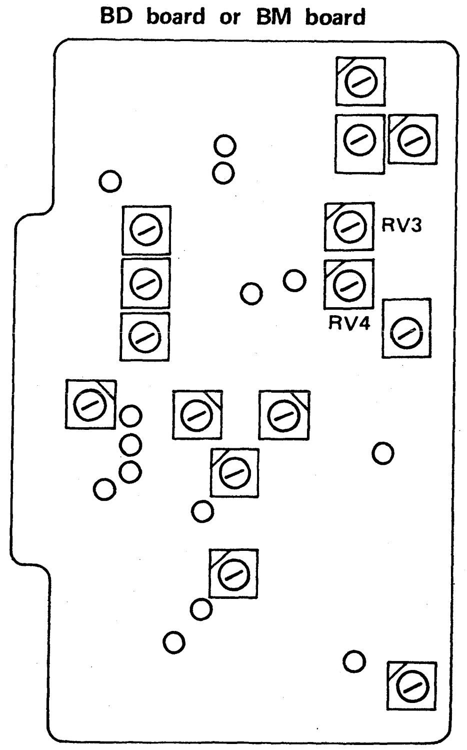
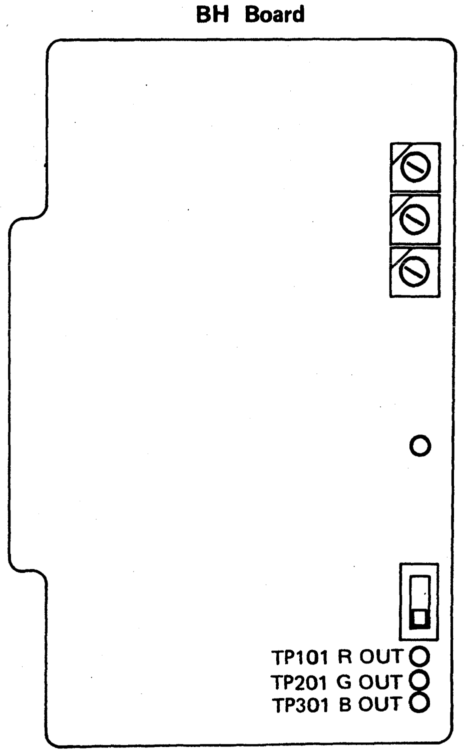

TP201 G OUT
RV4
RV5

Fig. 26-3


BG board
RV4
RV5


BD board or BM board
RV3
RV4


BH Board
TP101 R OUT
TP201 G OUT
TP301 B OUT

27. BD BOARD (PAL) OR BM BOARD (PAL-M) PAL-D GAIN AND CCD BIAS ADJUSTMENT

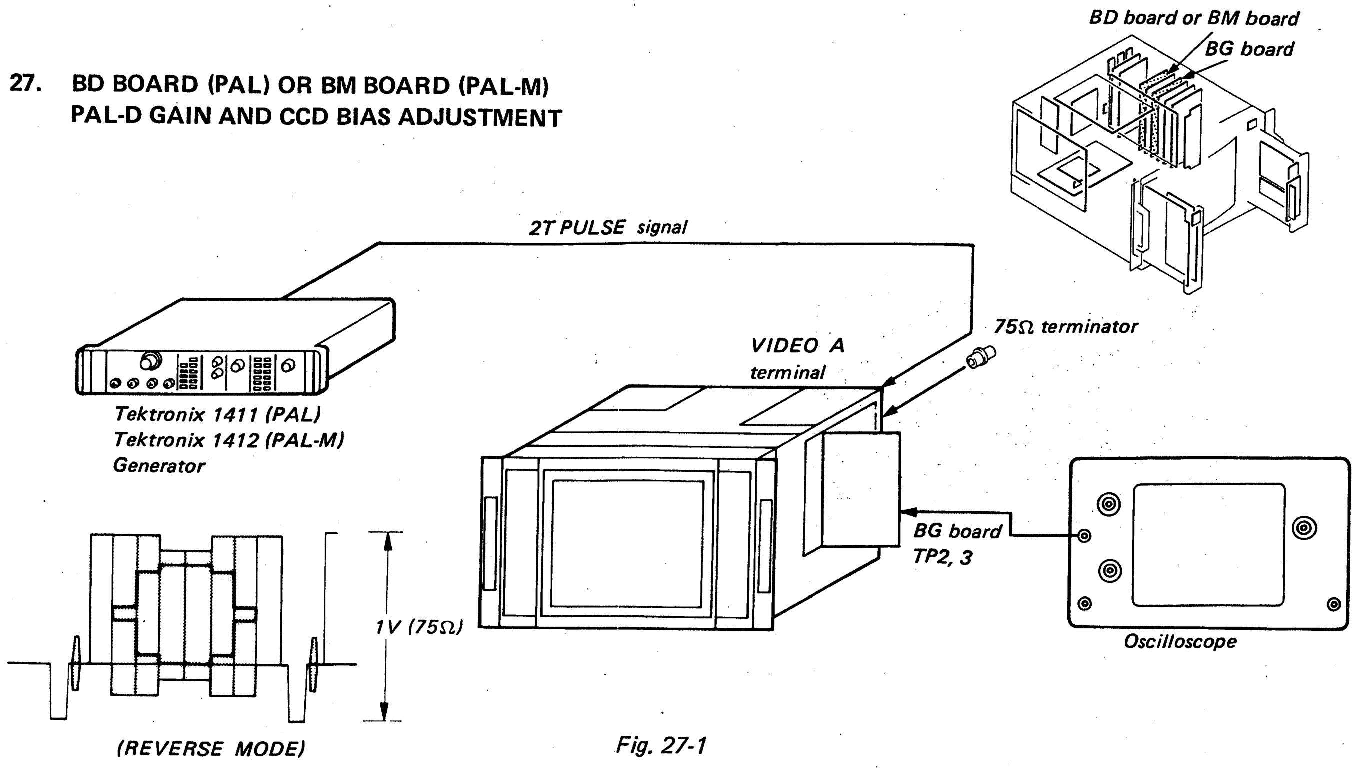

BD board or BM board
BG board
2T PULSE signal
VIDEO A terminal
75Ω terminator
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
BG board TP2, 3
Oscilloscope
1 V (75Ω)
(REVERSE MODE)

Fig. 27-1

* Set the PAL switch of BVM-1410P or 1410PM to the D position.

1. Complete the connections as shown in Fig. 27-1. Turn on the power of this monitor. Set the INPUT switch to the A position, and the SYNC switch to the INT position.
2. Connect the oscilloscope probe to TP2 on the BG board.
3. Turn RV5 and RV6 on the BD or BM board fully clockwise.
4. By observing the waveform shown in Fig. 27-2, adjust RV9 on the BD or BM board so that it becomes A = B.
5. Adjust RV5 on the BD or BM board so that the waveform shown in Fig. 27-2 becomes flat.
6. Connect the probe of the oscilloscope to TP3 on the BG board and observe the section shown in Fig. 27-3.
7. Adjust RV10 on the BD or BM board so that the waveform of the oscilloscope becomes A = B.
8. Adjust RV6 on the BD or BM board so that the waveform shown in Fig. 27-3 becomes flat.

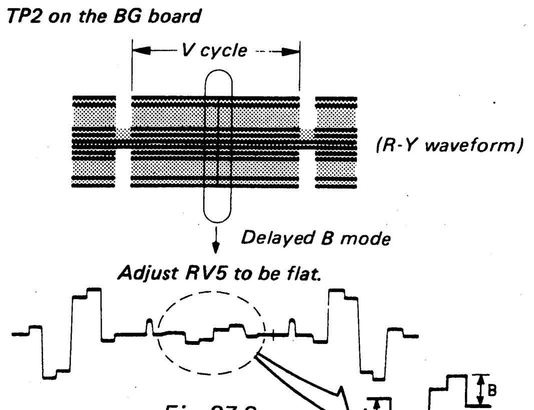

TP2 on the BG board
V cycle
(R-Y waveform)
Delayed B mode
Adjust RV5 to be flat.
A
B

Fig. 27-2

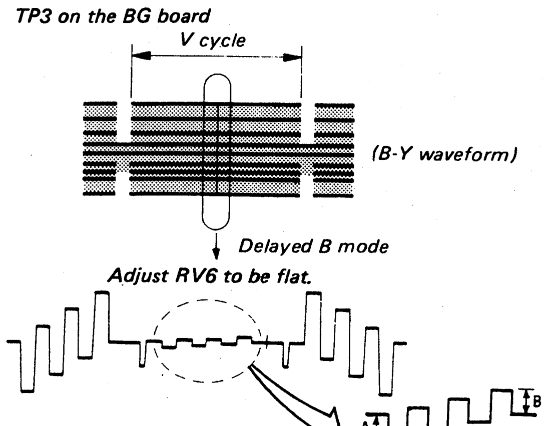
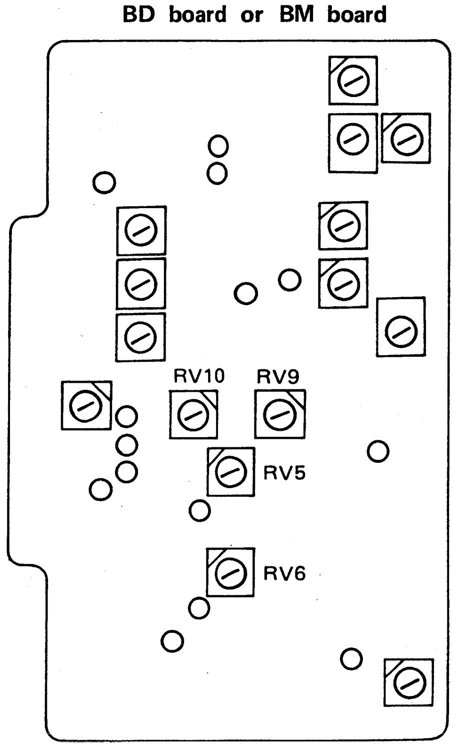
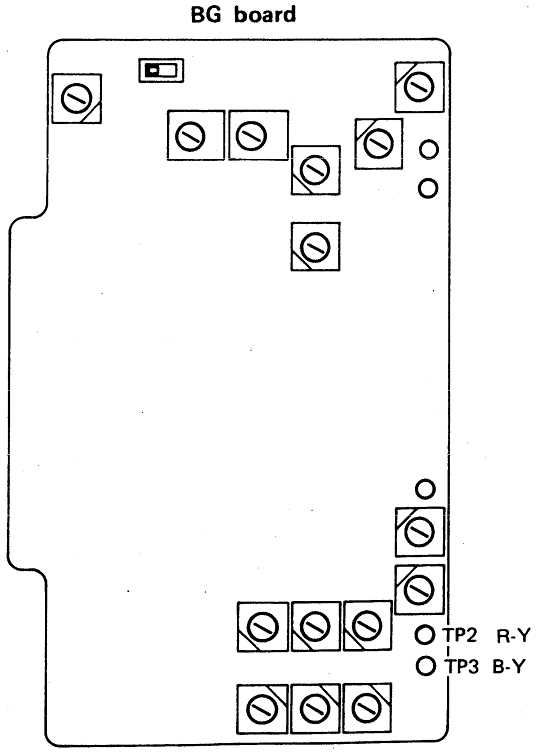
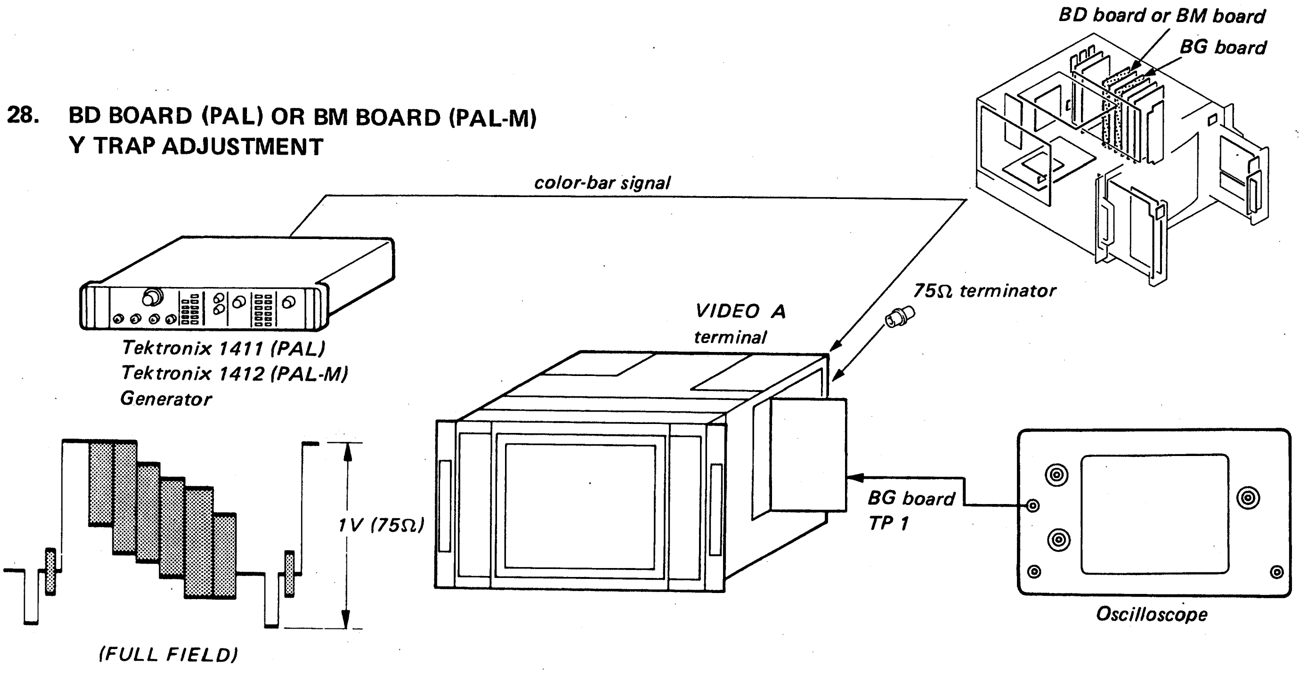

TP3 on the BG board
V cycle
(B-Y waveform)
Delayed B mode
Adjust RV6 to be flat.
A
B

Fig. 27-3


BD board or BM board
RV10
RV9
RV5
RV6


BG board
TP2 R-Y
TP3 B-Y

28. BD BOARD (PAL) OR BM BOARD (PAL-M) Y TRAP ADJUSTMENT


BD board or BM board
BG board
color-bar signal
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
VIDEO A
terminal
75Ω terminator
1 V (75Ω)
BG board
TP 1
Oscilloscope
(FULL FIELD)

1. Input color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BD or BM board so that 4.43 MHz (PAL) or 3.58 MHz (PAL-M) subcarrier is minimum as shown in Fig. 28-1.

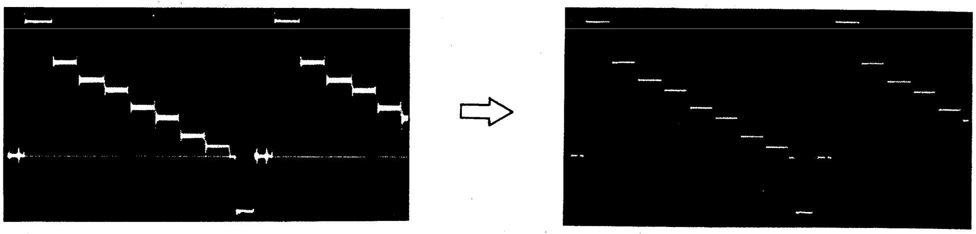
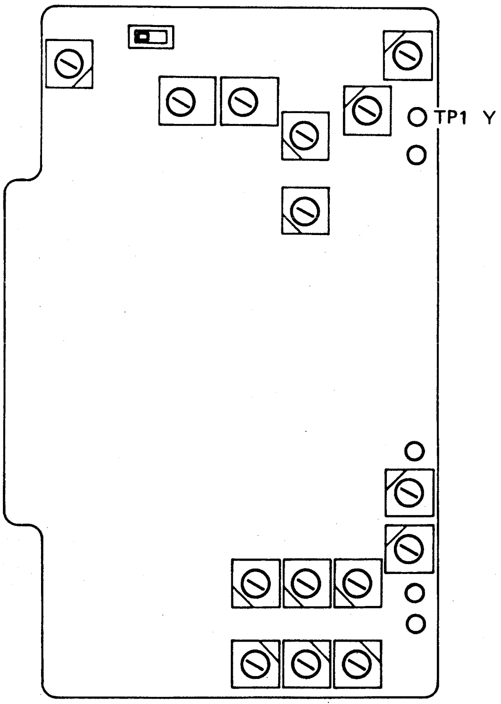
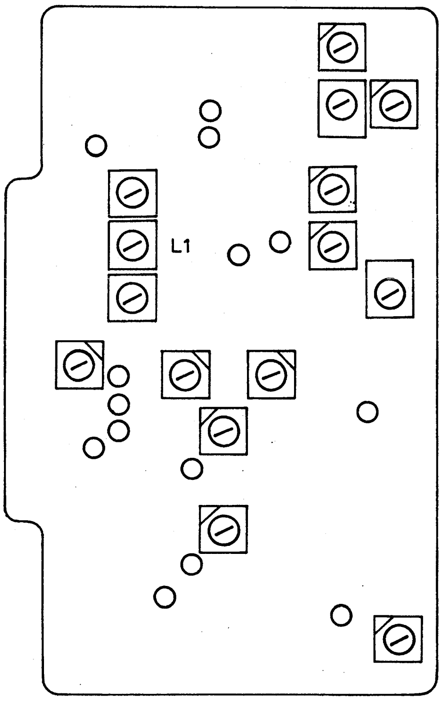


Fig. 28-1

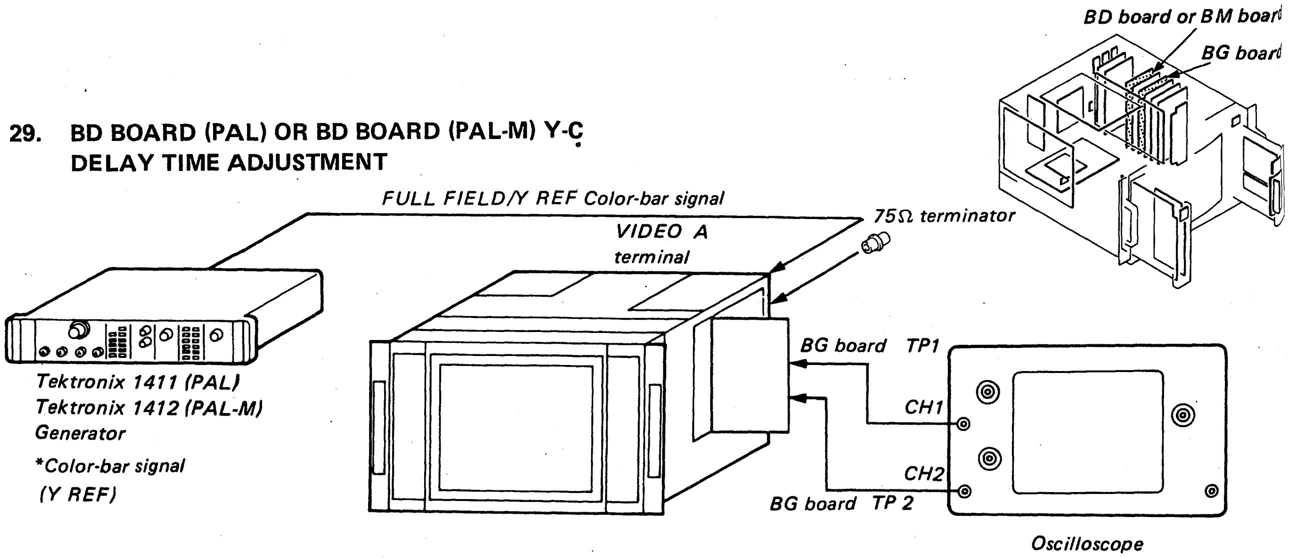
BG board



BD board or BM board



29. BD BOARD (PAL) OR BD BOARD (PAL-M) Y-C DELAY TIME ADJUSTMENT


BD board or BM board
BG board
FULL FIELD/Y REF Color-bar signal
VIDEO A terminal
75Ω terminator
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
*Color-bar signal
(Y REF)
BG board TP1
CH1
CH2
BG board TP 2
Oscilloscope

- * Set the PAL switch of the BVM-1410P or 1410PM to the S position.
1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV1 of BD or BM board so that the output waveform as shown in Fig. 29-1.

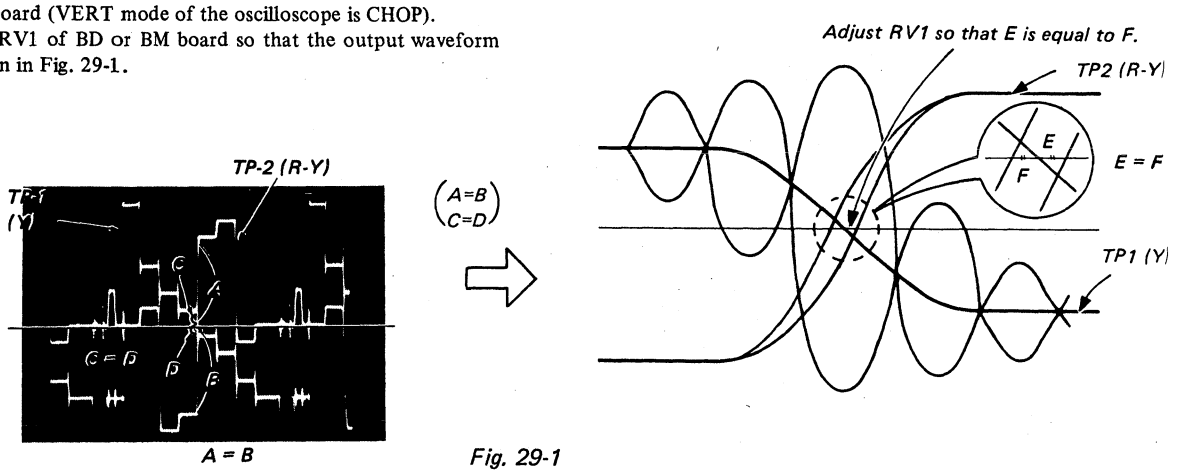
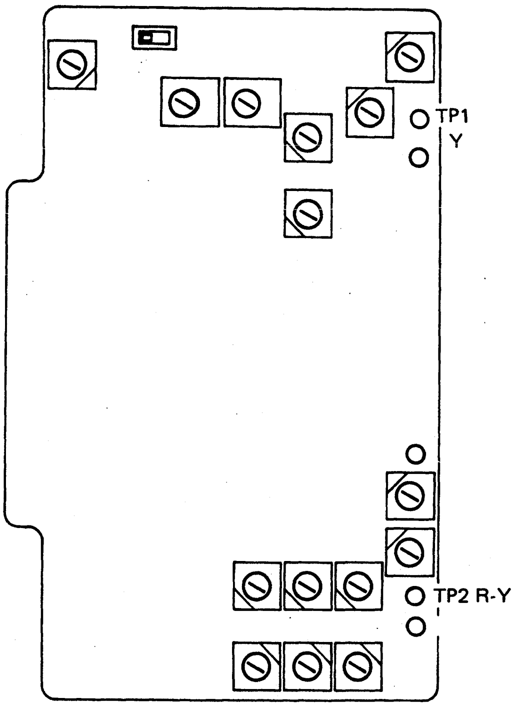
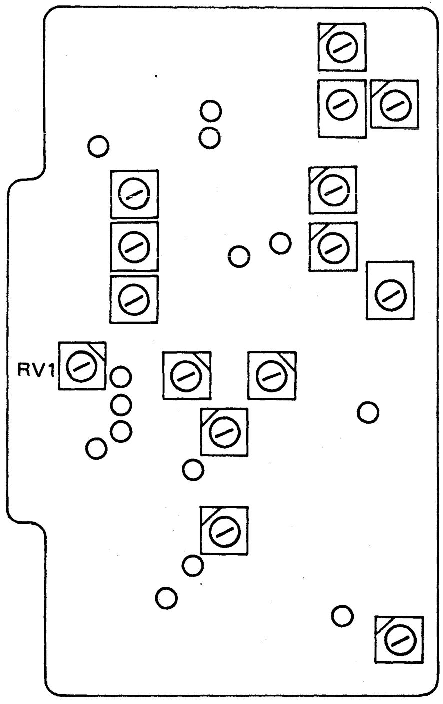

TP-2 (R-Y)
TP-1 (Y)
C
A
C = D
D
B
A = B
(A=B C=D)
Adjust RV1 so that E is equal to F.
TP2 (R-Y)
E
F
E = F
TP1 (Y)

Fig. 29-1

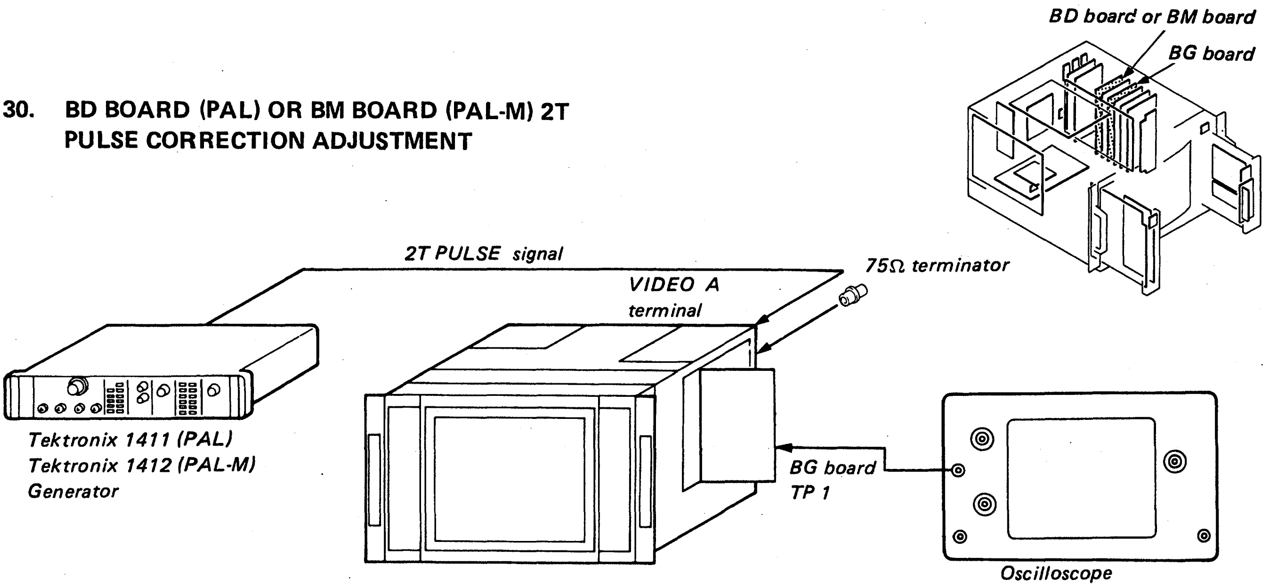
BG Board



BD board or BM board



30. BD BOARD (PAL) OR BM BOARD (PAL-M) 2T PULSE CORRECTION ADJUSTMENT


BD board or BM board
BG board
2T PULSE signal
VIDEO A
terminal
75Ω terminator
Tektronix 1411 (PAL)
Tektronix 1412 (PAL-M)
Generator
BG board
TP 1
Oscilloscope

1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BD or BM board so that A is equal to B as shown in Fig. 30-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 30-1.

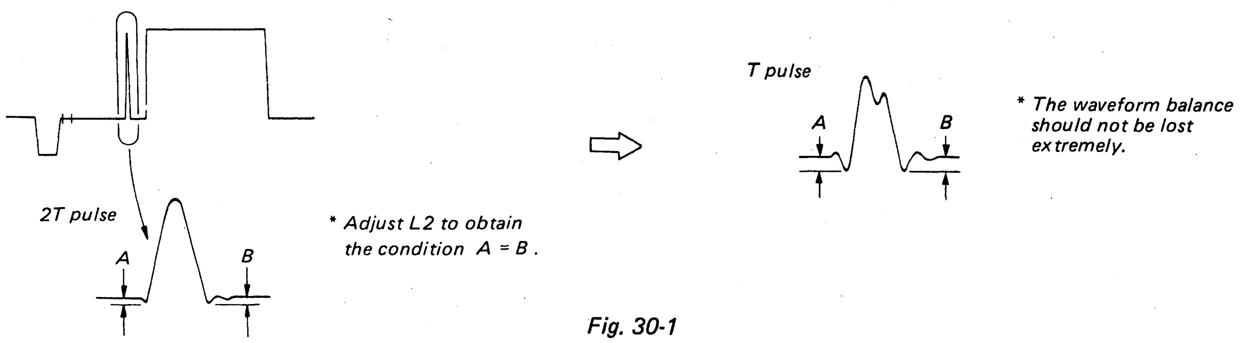
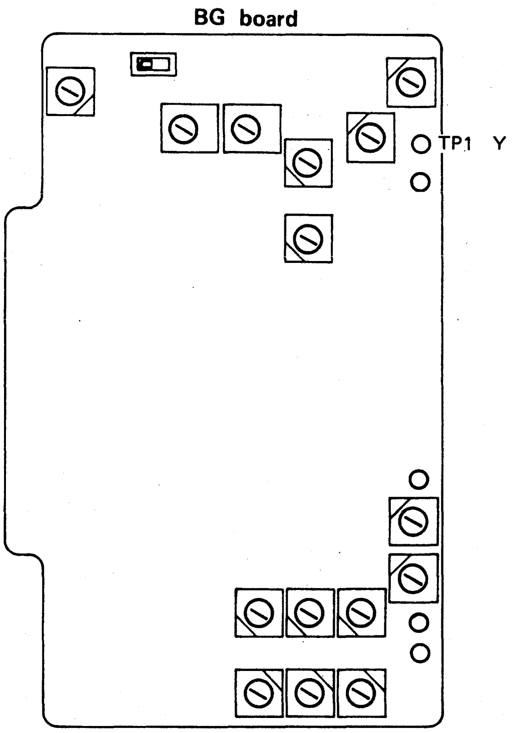
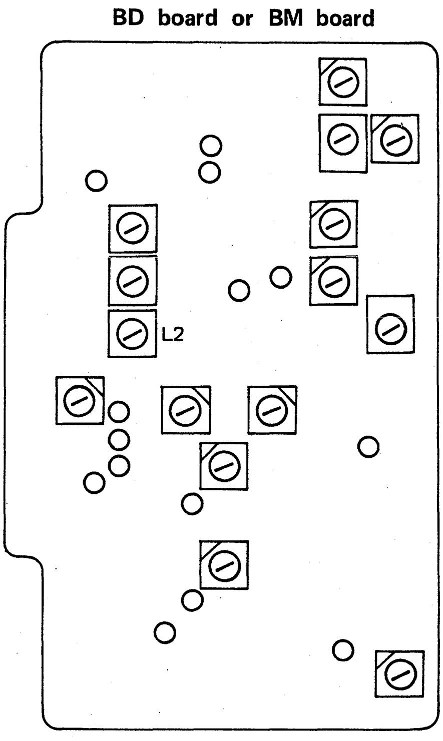
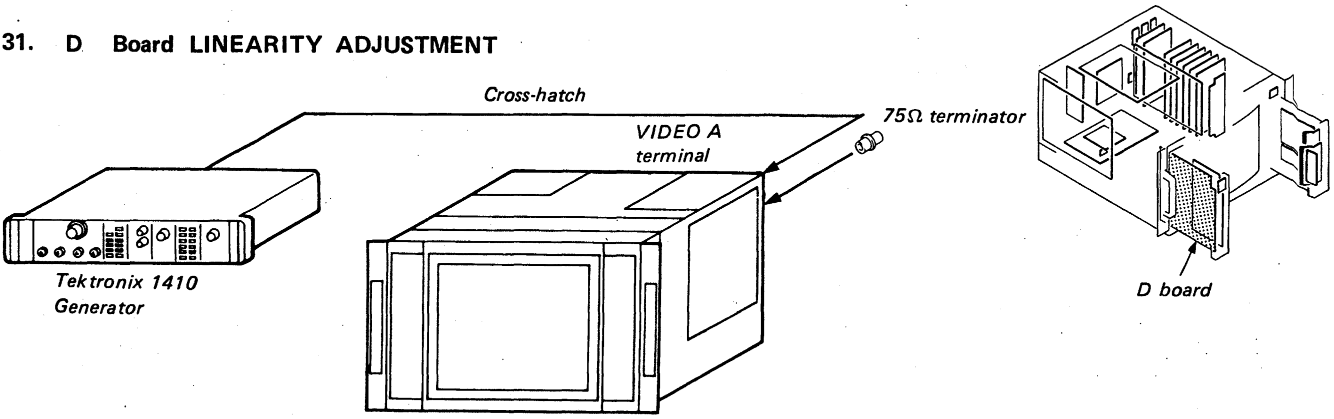

2T pulse
A
B
* Adjust L2 to obtain the condition A = B .
T pulse
A
B
* The waveform balance should not be lost extremely.

Fig. 30-1


BG board
TP1 Y


BD board or BM board
L2

31. D Board LINEARITY ADJUSTMENT


Cross-hatch
VIDEO A
terminal
75Ω terminator
Tektronix 1410
Generator
D board

• Vertical Pincushion Adjustment

1. Input only the H line of cross-hatch signal.
2. Minimize the X.BOW distortion with X.BOW (RV11) on the D board as shown in third from the top of Fig. 31-1.
3. Minimize the T and B pincushion distortion gain with T.B.P (RV12) on the D board as shown in second from the top of Fig. 31-1.

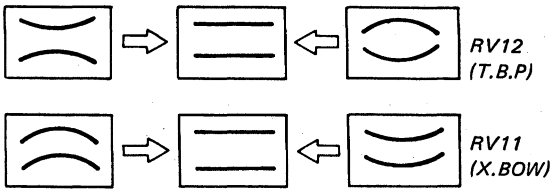
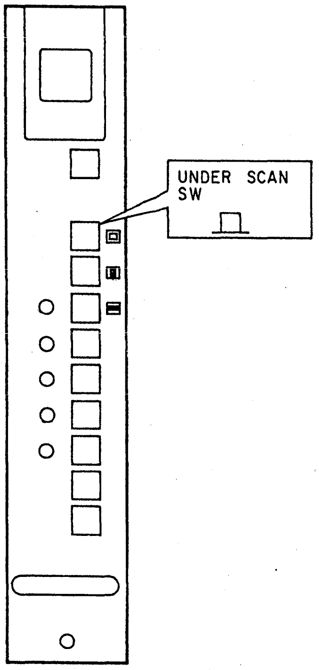
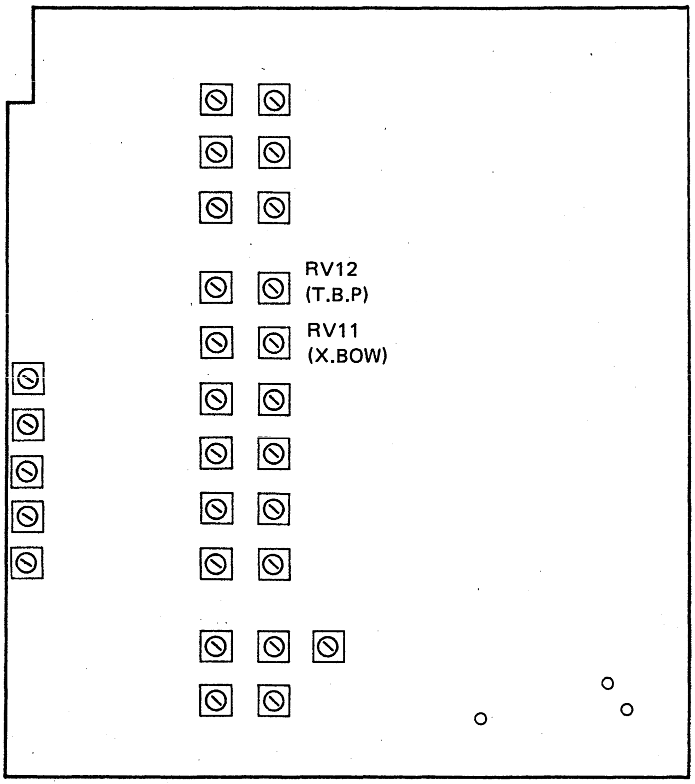

RV12
(T.B.P)
RV11
(X.BOW)

Fig. 31-1

FRONT PANEL (L)


UNDER SCAN
SW

D board


RV12
(T.B.P)
RV11
(X.BOW)

• Vertical Lineality Adjustment

1. Input only the H line of cross-hatch signal.
2. Adjust V center with V.CENTER (RV10) at the left side of control panel.
3. Adjust the balance of V lineality with V.L.B (RV9) on the D board as shown in Fig. 31-2.
4. Adjust the gain of V lineality with V.L.G (RV8) on the D board as shown in Fig. 31-3.
5. Adjust the V.HEIGHT with V.H.N (RV3) on the D board.
6. Set the SCAN selector to UNDER position.

RV9 ..... V LIN BALANCE

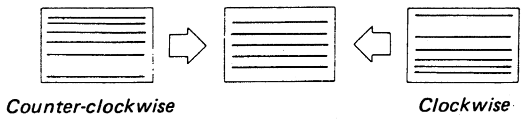

Counter-clockwise
Clockwise

Fig. 31-2

RV8 ..... V LIN GAIN

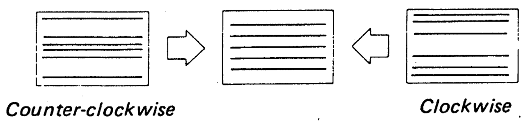

Counter-clockwise
Clockwise

Fig. 31-3

Side Pincushion Adjustment

1. Input only the V line of cross-hatch signal.
2. Minimize the Y.BOW distortion with Y.BOW (RV13) on the D board as shown in Fig. 31-6.
3. Minimize the side pincushion distortion with S.P.N (RV5) on the D board as shown in Fig. 31-4.
4. Minimize the side pincushion tilt distortion with S.P.T (RV7) on the D board as shown in Fig. 31-5.
5. Set the SCAN selector to UNDER position.
6. Minimize the side pincushion distortion with S.P.U (RV6) on the D board as shown in Fig. 31-4.

RV5 (S.P.N)
RV6 (S.P.U)

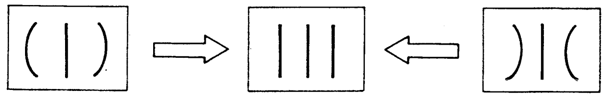


Fig. 31-4

RV7 (S.P.T)

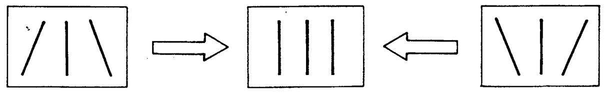


Fig. 31-5

RV13 (Y.BOW)

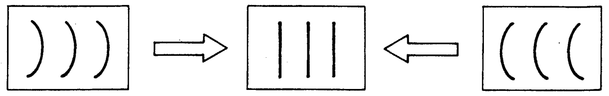


Fig. 31-6

• Horizontal Lineality Adjustment

1. Input only the V line of cross-hatch signal.
2. Adjust the horizontal centering with H CENTER (RV14) at the left side of control panel.
3. Adjust the balance of H.lineality with H.L.B (RV28) on the D board as shown in Fig. 31-7 "Change to horizontal".
4. Adjust the gain of H.lineality with H.L.G (RV27) on the D board as shown in Fig. 31-8 "Change to horizontal".
5. Adjust the H.WIDTH with H.W.N (RV1) on the D board.
6. Set the SCAN selector to UNDER position.
7. Adjust the H.WIDTH with H.W.U (RV2) on the D board.

RV28 (H.L.B)

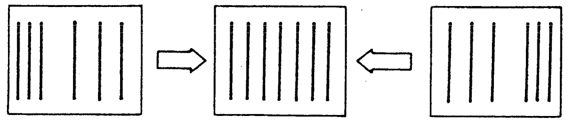


Fig. 31-7

RV27 (H.L.G)

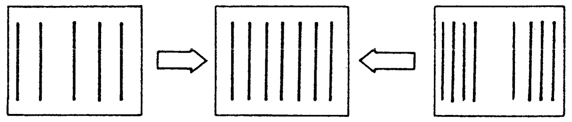
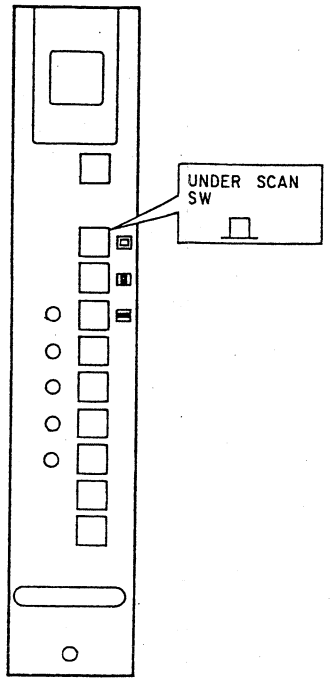
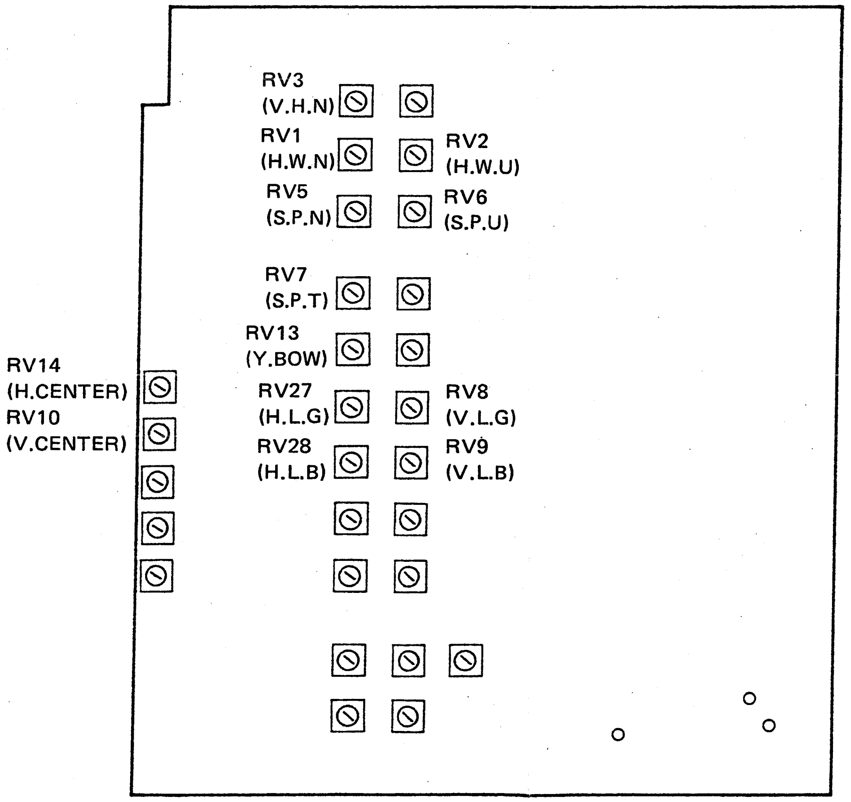


Fig. 31-8

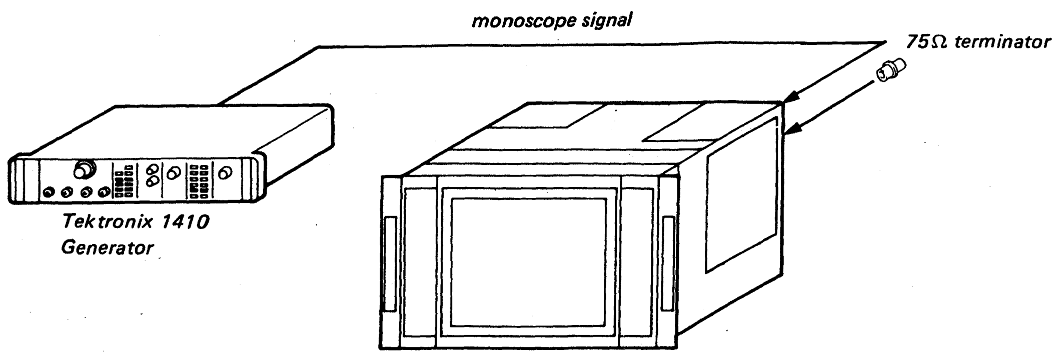
FRONT PANEL (L)

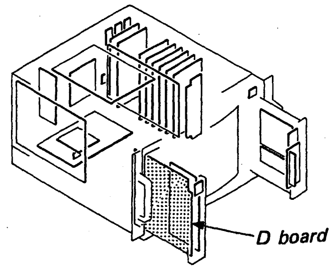

UNDER SCAN
SW

D board


RV3
(V.H.N)
RV1
(H.W.N)
RV2
(H.W.U)
RV5
(S.P.N)
RV6
(S.P.U)
RV7
(S.P.T)
RV13
(Y.BOW)
RV14
(H.CENTER)
RV10
(V.CENTER)
RV27
(H.L.G)
RV8
(V.L.G)
RV28
(H.L.B)
RV9
(V.L.B)

31. DA Board LINEARITY ADJUSTMENT


monoscope signal
75Ω terminator
Tektronix 1410
Generator



• H.OSC Free-run Adjustment

1. Set the SYNC selector to EXT.
2. Adjust H.FREQ. (RV25) on the D board until the picture movement is still or slow.

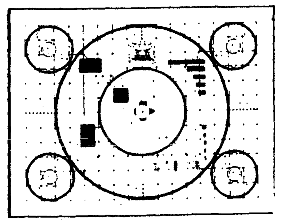


Fig. 32-1

• Horizontal Phase and Horizontal Blanking Adjustments

1. Set the SCAN seiector to UNDER position.
2. Turn the horizontal blanking controls H.BLK.R fully clockwise and H.BLK.L fully counterclockwise. (When the raster at both sides of screen are not appear completely, turn H.W.U (RV2) until obtaining the raster.)

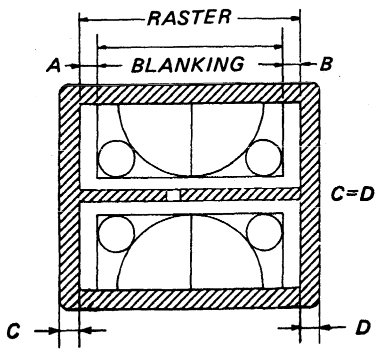
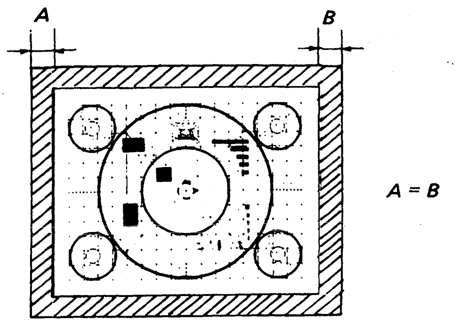

RASTER
A
BLANKING
B
C=D
C
D

Fig. 32-2

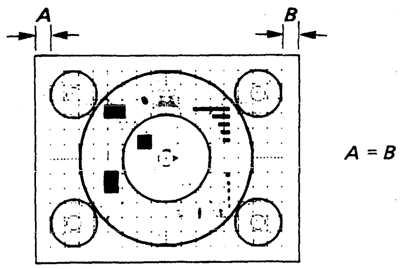
3. Adjust H.PHASE (RV24) on the D board for both sides of raster width without signal component coincidence.



monoscope pattern

Fig. 32-3

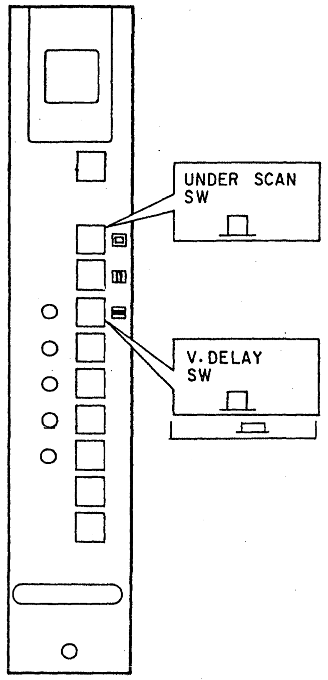
4. Adjust H.BLK.R/H.BLK.L (RV23 and RV22) on the D board so that the raster width without signal component become half.



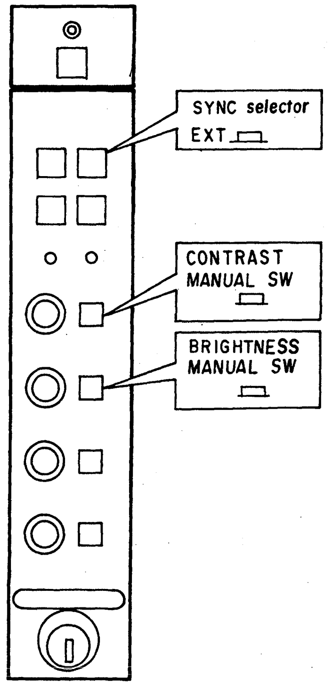
monoscope pattern

Fig. 32-4

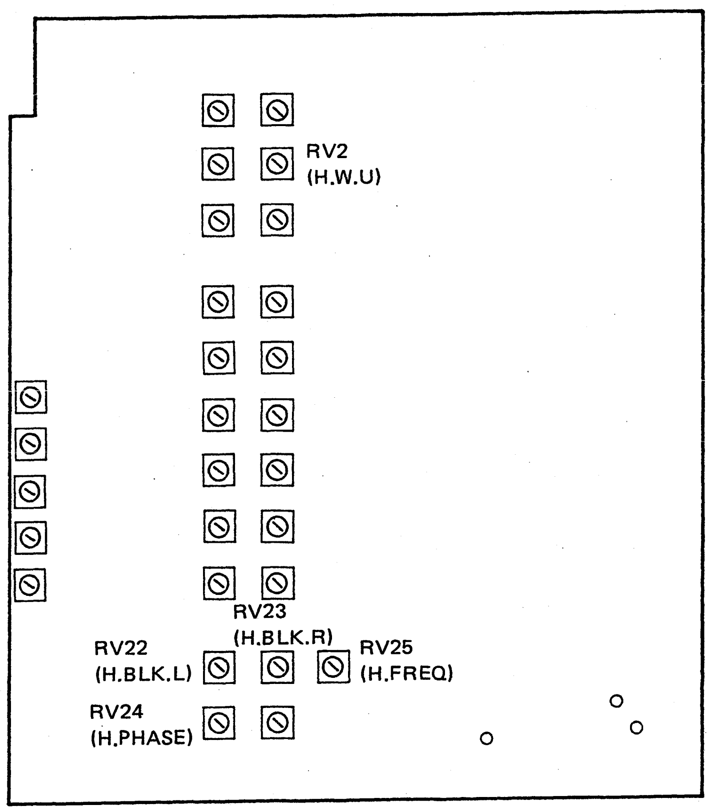
FRONT PANEL (L)


UNDER SCAN SW
V.DELAY SW

FRONT PANEL (R)

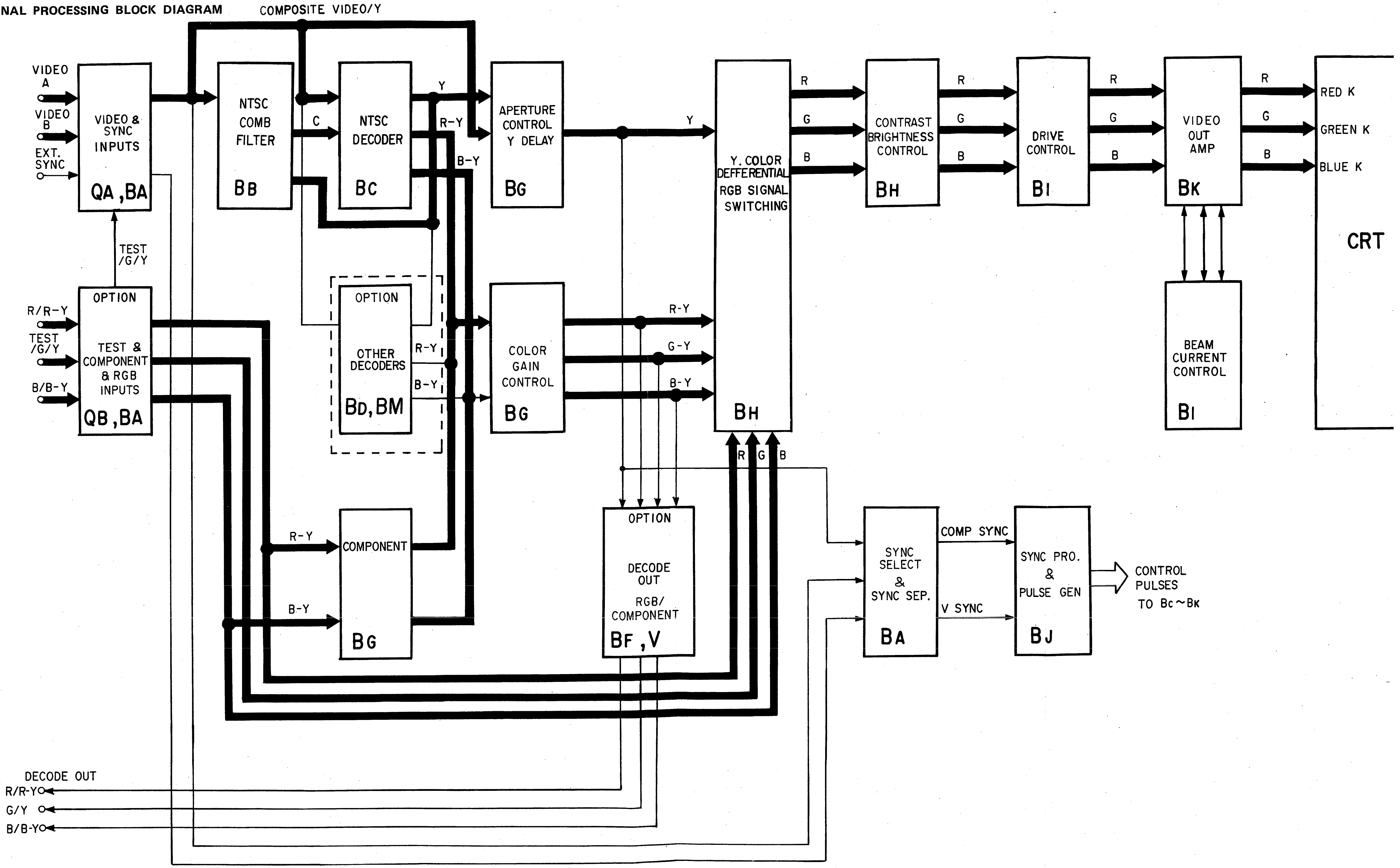

SYNC selector
EXT
CONTRAST MANUAL SW
BRIGHTNESS MANUAL SW

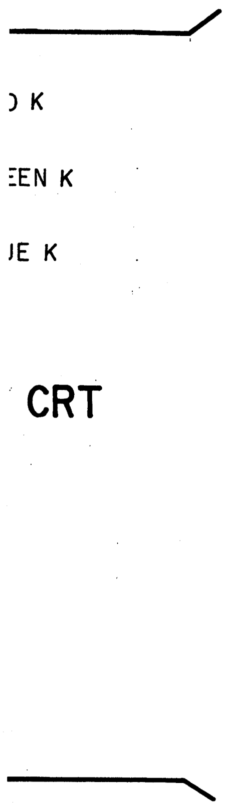
D board


RV2
(H.W.U)
RV23
(H.BLK.R)
RV22
(H.BLK.L)
RV25
(H.FREQ)
RV24
(H.PHASE)

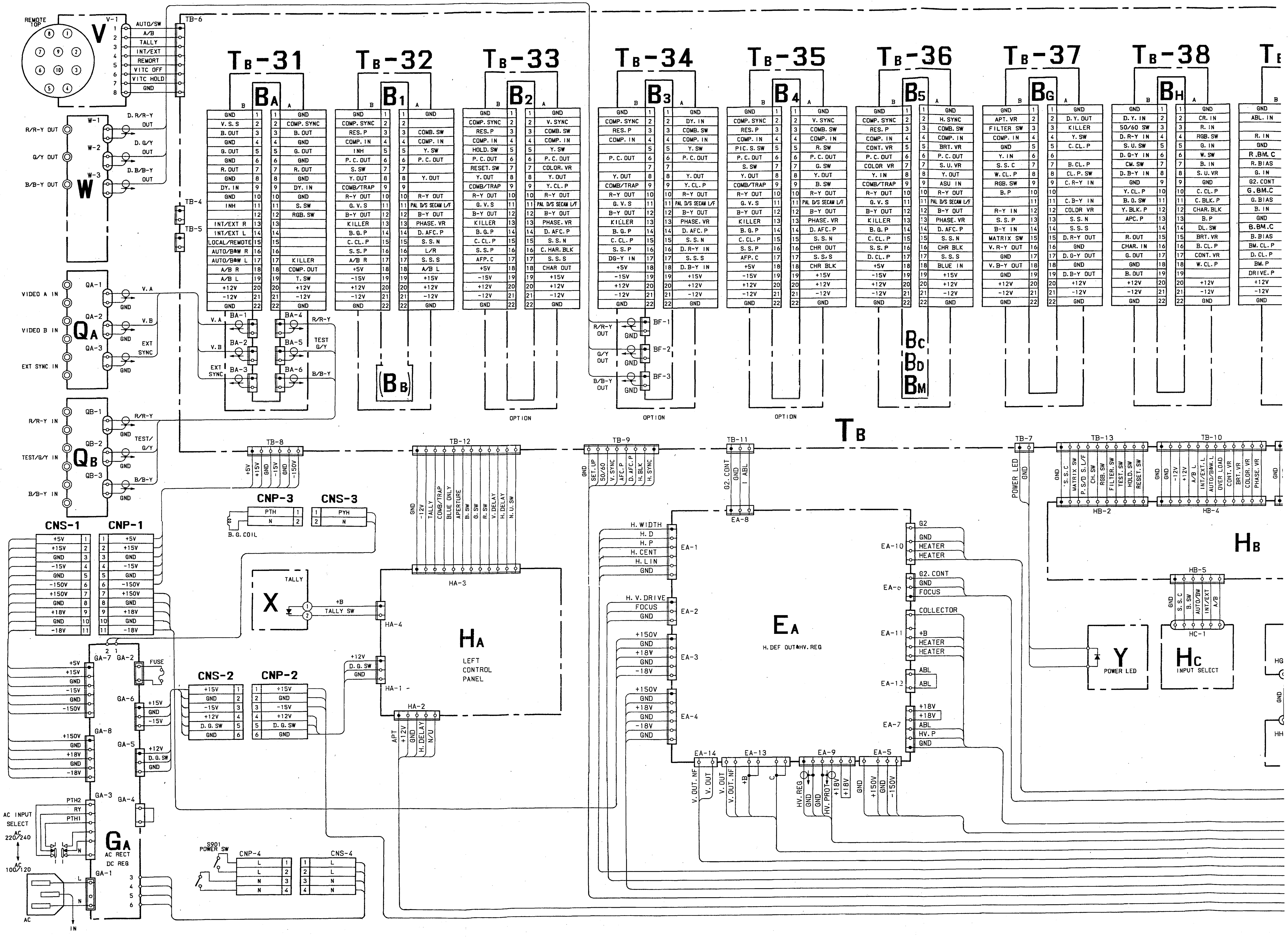
SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM
SIGNAL PROCESSING BLOCK DIAGRAM

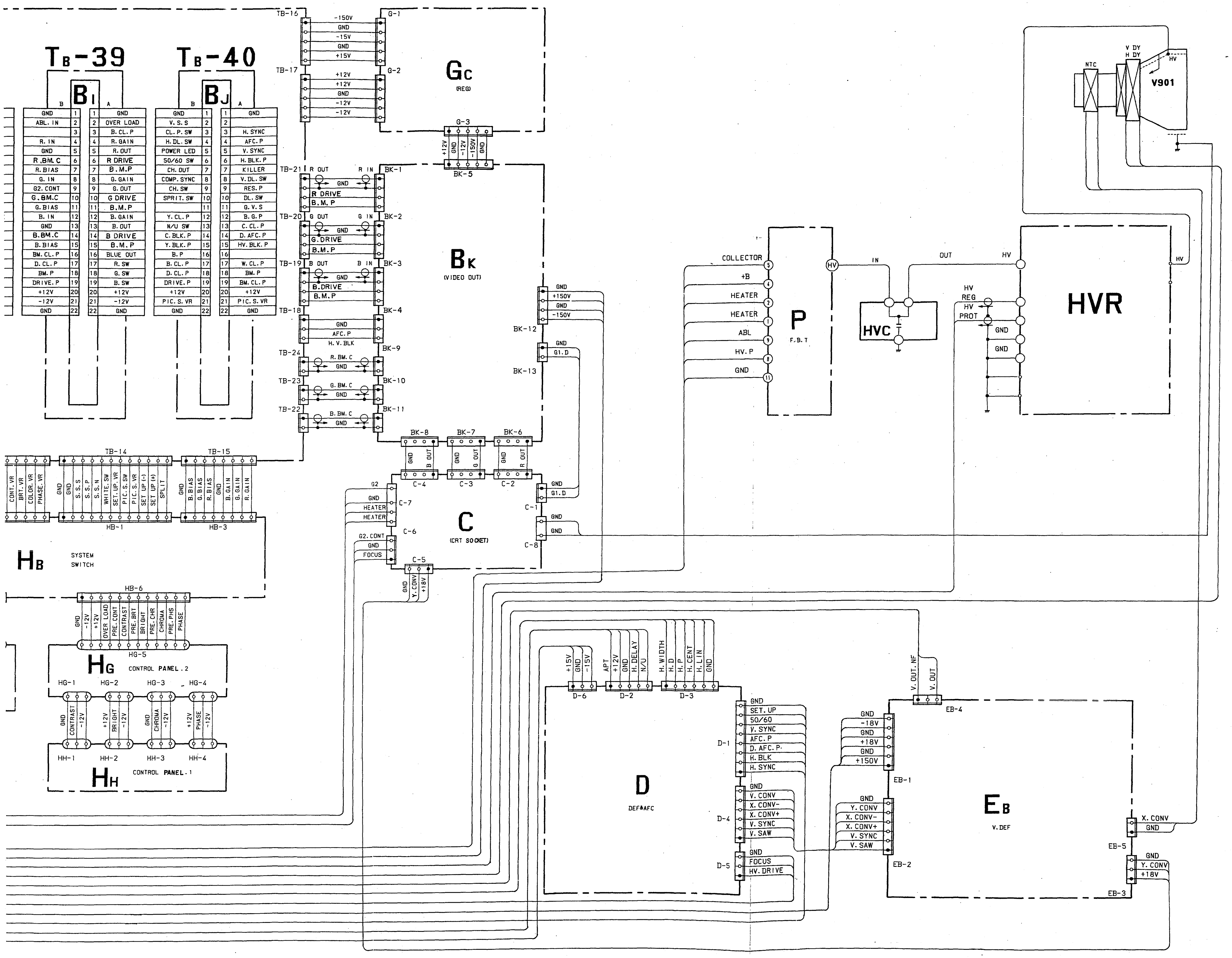

COMPOSITE VIDEO/Y
VIDEO A
VIDEO B
EXT. SYNC
VIDEO & SYNC INPUTS
QA ,BA
TEST /G/Y
NTSC COMB FILTER
BB
C
NTSC DECODER
BC
Y
R-Y
B-Y
APERTURE CONTROL Y DELAY
BG
Y
Y. COLOR DEFFERENTIAL RGB SIGNAL SWITCHING
BH
R
G
B
CONTRAST BRIGHTNESS CONTROL
BH
R
G
B
DRIVE CONTROL
BI
R
G
B
VIDEO OUT AMP
BK
R
G
B
RED K
GREEN K
BLUE K
CRT
BEAM CURRENT CONTROL
BI
R/R-Y
TEST /G/Y
B/B-Y
OPTION
TEST & COMPONENT & RGB INPUTS
QB ,BA
OPTION
OTHER DECODERS
BD, BM
R-Y
B-Y
COLOR GAIN CONTROL
BG
R-Y
G-Y
B-Y
R
G
B
R-Y
B-Y
COMPONENT
BG
OPTION
DECODE OUT
RGB/ COMPONENT
BF ,V
SYNC SELECT & SYNC SEP.
BA
COMP SYNC
V SYNC
SYNC PRO. & PULSE GEN
BJ
CONTROL PULSES TO Bc~Bk
DECODE OUT
R/R-Y
G/Y
B/B-Y


) K
EEN K
JE K
CRT

5-2. FRAME WIRING DIAGRAM


V
W
QA
QB
GA
AC RECT
DC REG
X
HA
LEFT CONTROL PANEL
EA
H.DEF OUT&HV.REG
HB
HC
INPUT SELECT
Y
POWER LED
TB
TB-31
TB-32
TB-33
TB-34
TB-35
TB-36
TB-37
TB-38
BA
B1
B2
B3
B4
B5
BG
BH
BB
BC
BD
BM
OPTION
CNS-1
CNP-1
CNS-2
CNP-2
CNS-3
CNP-3
CNS-4
CNP-4
B.G.COIL
S901 POWER SW
AC INPUT SELECT
AC 220/240
AC 100/120
REMOTE TOP
VIDEO A IN
VIDEO B IN
EXT SYNC IN
R/R-Y OUT
G/Y OUT
B/B-Y OUT
R/R-Y IN
TEST/G/Y IN
B/B-Y IN
TB-6
TB-4
TB-5
TB-7
TB-8
TB-9
TB-10
TB-11
TB-12
TB-13
HA-1
HA-2
HA-3
HA-4
HB-2
HB-4
HB-5
HC-1
EA-1
EA-2
EA-3
EA-4
EA-5
EA-7
EA-8
EA-9
EA-10
EA-11
EA-12
EA-13
EA-14
GA-1
GA-2
GA-3
GA-4
GA-5
GA-6
GA-7
GA-8
BF-1
BF-2
BF-3
FUSE
TALLY
TALLY SW

FRAME FRAME



TB-39
TB-40
B1
BJ
TB-16
TB-17
G-1
G-2
G-3
Gc
(REG)
-150V
GND
-15V
+15V
+12V
-12V
BK-5
TB-21
TB-20
TB-19
TB-18
TB-24
TB-23
TB-22
BK-1
BK-2
BK-3
BK-4
BK-9
BK-10
BK-11
BK-12
BK-13
BK
(VIDEO OUT)
R OUT
R IN
G OUT
G IN
B OUT
B IN
R DRIVE
G DRIVE
B DRIVE
B.M.P
AFC.P
H.V.BLK
R.BM.C
G.BM.C
B.BM.C
G1.D
BK-8
BK-7
BK-6
C-1
C-2
C-3
C-4
C-5
C-6
C-7
C-8
C
(CRT SOCKET)
G2
HEATER
G2.CONT
FOCUS
Y.CONV
+18V
TB-14
TB-15
HB-1
HB-3
HB-6
HB
SYSTEM SWITCH
HG-5
HG
CONTROL PANEL.2
HG-1
HG-2
HG-3
HG-4
HH-1
HH-2
HH-3
HH-4
HH
CONTROL PANEL.1
D-1
D-2
D-3
D-4
D-5
D-6
D
DEF&AFC
EB-1
EB-2
EB-3
EB-4
EB-5
EB
V.DEF
P
F.B.T
COLLECTOR
+B
ABL
HV.P
HV
HVC
HVR
HV REG
HV PROT
IN
OUT
V901
NTC
V DY
H DY

5-3. MOUNTING AND SCHEMATIC DIAGRAMS

Note:

> **Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

> **Note: Les composants identifiés par une trame et par une marque ⚠ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.**

- All capacitors are in μF unless otherwise noted. p : $\mu\mu$F 50 WV or less are not indicated except for electrolytics.
- All resistor are in ohms, 1/2W on the C board and 1/4W on the rest of the boards unless otherwise specified.
  kΩ = 1000Ω, MΩ = 1000kΩ
- ▭ : nonflammable resistor.
- △ : internal component.
- ⏚ : direct connection to points marked ⏚ on the chassis
- ☐ : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ☒ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
  When replacing components identified by ◪, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ☒ and repeat the adjustment until the specified value is achieved.
  Refer to R52, R53, R67, R68, R72, R75, R115, R106, R108.
  Adjust on page 4-11 ~ 4-16.
  When replacing the part in below table, be sure to perform the related adjustment.

Reference information

RESISTOR :	RN	METAL FILM
:	RC	SOLID
:	FPRD	NONFLAMMABLE CARBON
:	FUSE	NONFLAMMABLE FUSIBLE
:	RS	NONFLAMMABLE WIREWOUND
:	RB	NONFLAMMABLE CEMENT
COIL :	LF-8L	MICRO INDUCTOR
CAPACITOR:	TA	TANTALUM
:	PS	STYROL
:	PP	POLYPROPYLENE
:	PT	MYLAR
:	MPS	METALIZED POLYESTER
:	MPP	METALIZED POLYPROPYLENE
:	ALB	BIPOLAR
:	ALT	HIGH TEMPERATURE
:	AIR	HIGH RIPPLE

Part replaced (◪)	Adjustment (☒)
C59, IC3, R67, R68, R78, RV2 . . . (GA board)	+B MAX (R67, R68) Page 4-11.
Q13, Q14, R52, R53 (GA board) D5, D6, D7, D8, Q3, Q4, Q5, R4, R5, R19, R20, R21, R22 . . . (GB board)	+B PROTECTER (R52, R53) Page 4-11.
R61, R62, R71, R73, R74, R88, RV1, IC2, IC3 (EA board) HV block	HV REG (R72, R75) Page 4-15
D24, D25, D27, D29, IC4, R89, R90, R102, R103, R105, R107, R109, R110, R111 (EA board) HR block	HV HOLD DOWN (R106, R108) Page 4-14
D24, D25, D27, D29, IC4, R89, R90, R102, R103, R112, R113, R114, R116, R117, R118, R119, R120, R121, R122, R123,R!† R124 (EA board) FBT (P board)	BEAM CURRENT PROTECTOR-1 (R115) Page 4-15

- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- Reading are taken with a 10 MΩ digital multimeter.
- ☐: adjustment for repair.
- ——— : B+ bus.
- – – –: B– bus.
- ⚹ : Can not be measured.
- Readings and waveforms are taken with a color-bar signal input and with a 75Ω terminator connected to an open terminal.

- Switches and controls are set as follows unless otherwise noted.

FRONT PANEL (R)

1.	INPUT selector	A	HC board
2.	SYNC selector	INT	
3.	MODE selector	AUTO	
4.	CONTRAST MANUAL switch	PRESET	HG board
5.	BRIGHTNESS MANUAL switch	PRESET	
6.	CHROMA MANUAL switch	PRESET	
7.	PHASE MANUAL switch	PRESET	

FRONT PANEL (L)

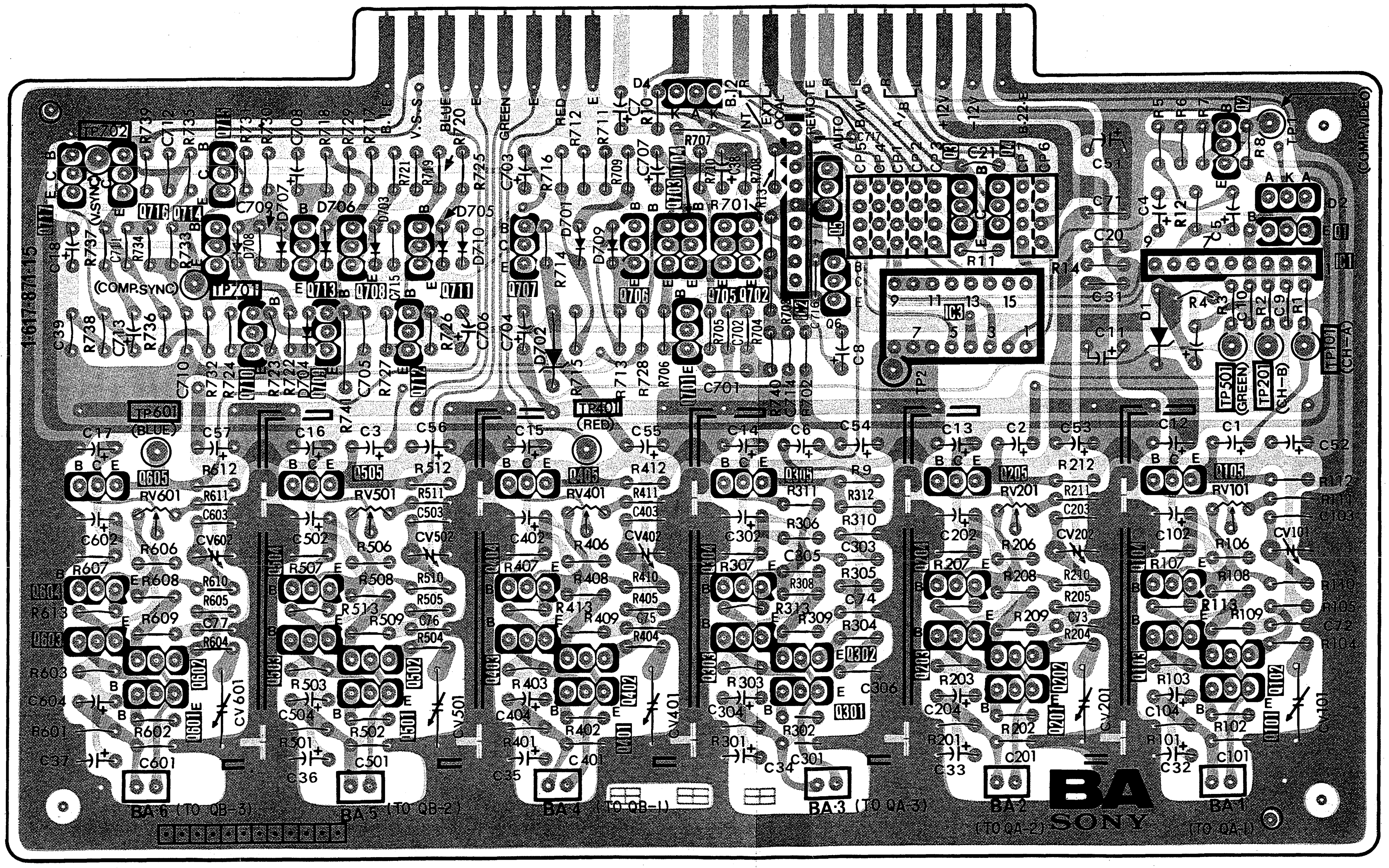
8.	SCAN MODE switch		
	▣ UNDER SCAN	NOR	HA board
	◫ H. DELAY	NOR	
	▤ V. DELAY	NOR	
9.	SCREEN switch (R)	NOR	
10.	SCREEN switch (G)	NOR	
11.	SCREEN switch (B)	NOR	
12.	APT switch	NOR	
13.	BLUE ONLY switch	NOR	
14.	COMB/TRAP filter selector	TRAP	

SUB CONTROL PANEL

15.	INPUT SELECT buttons	B	HB board
16.	COLOR STANDARD buttons	NTSC	
17.	FILTER switch	OFF	
18.	MATRIX switch	OFF	
19.	PAL/SECAM mode selector	D(L)	
20.	WHITE/OPERATE/SET UP selector	OPERATE	
21.	SPRIT SCREEN switch	OFF	
22.	CROSS HATCH switch	OFF	
23.	VITC switch	OFF	
24.	PIC. SET UP switch	OFF	
25.	AFC switch	2m sec	D board

BA board (SYNC SELECT & SYNC SEP, HOOK UP)

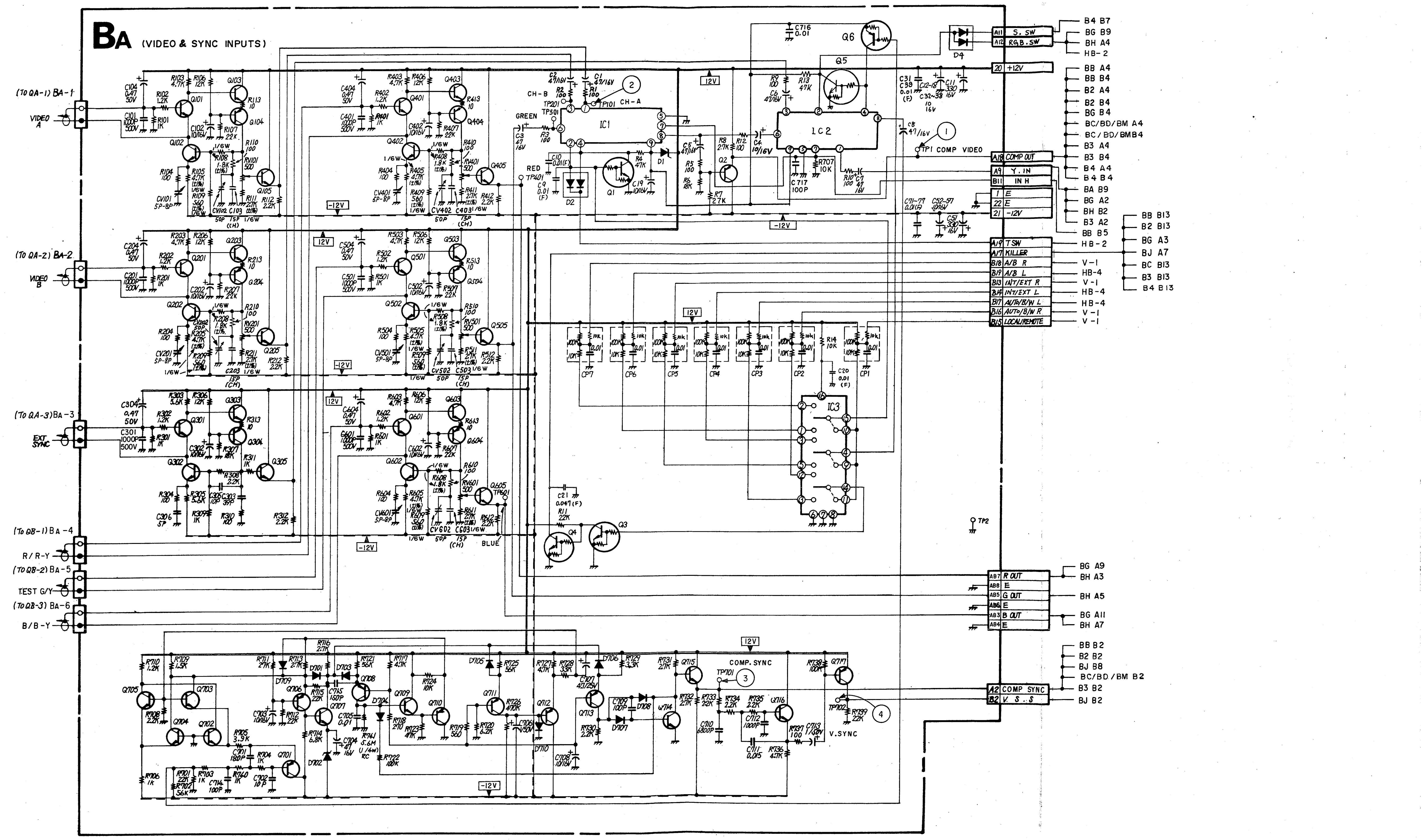
IC	2 3 1
Q	717 716 715 704 2 714 713 708 711 707 706 703 705 702 5 3 4 1 710 709 712 701 605 505 405 305 205 105 604 504 404 304 204 104 603 602 503 502 403 402 303 302 203 202 103 102 601 501 401 301 201 101
D	708 707 706 703 705 710 101 709 4 2 704 702 1
TP ADJ	TP702 TP701 TR401 TP1 TP601 TP2 TP501 TP201 TP101 RV601 CV602 RV501 RV401 RV201 RV101 CV502 CV402 CV202 CV102 CV601 CV501 CV401 CV201 CV101

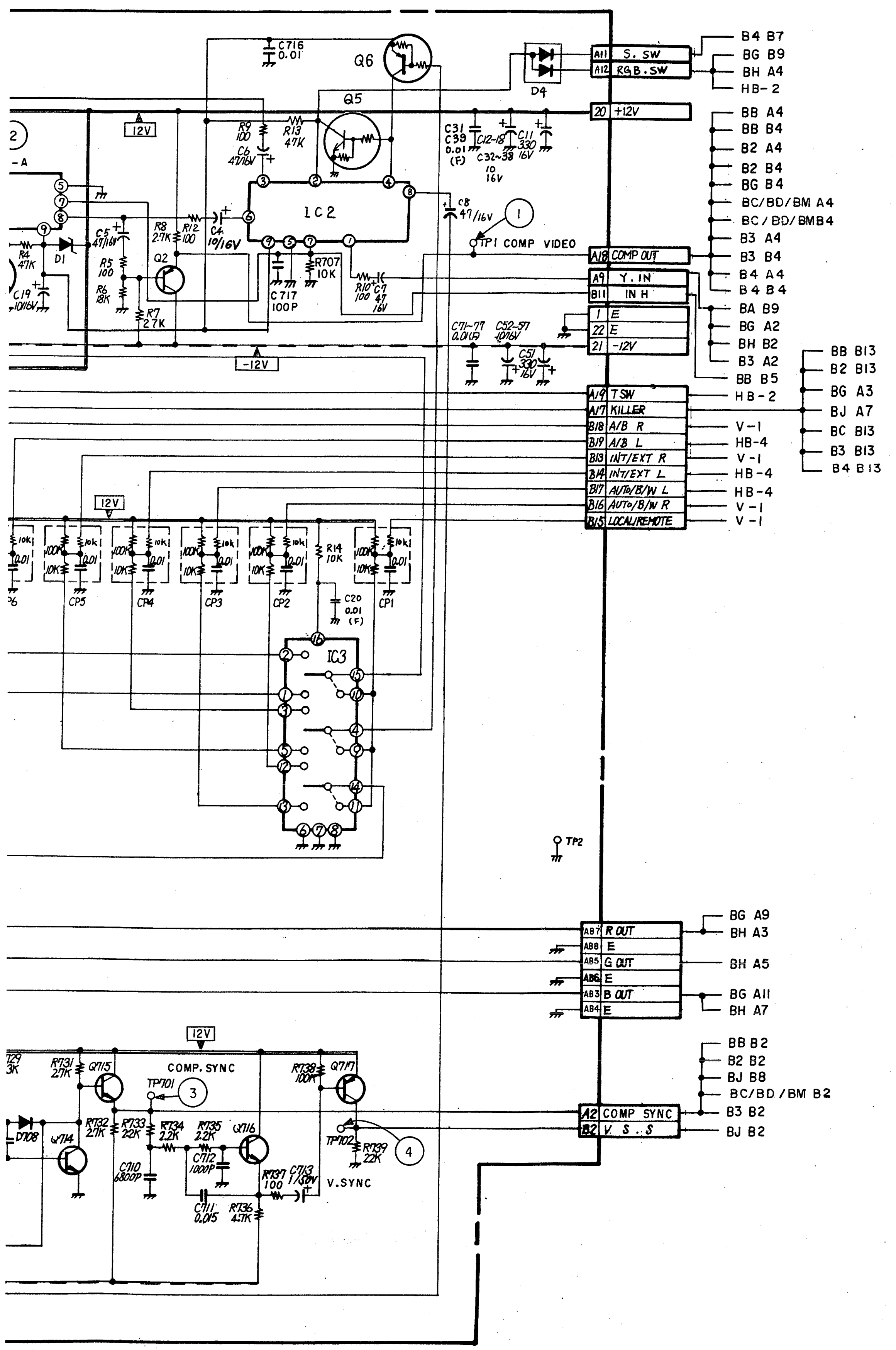


1-617-871-15
TP702
(COMP.SYNC)
TP701
TP601 (BLUE)
TR401 (RED)
TP501 (GREEN)
TP201 (CH-B)
TP101 (CH-A)
TP1 (COMP.VIDEO)
BLUE
GREEN
RED
V.S.S
B.12
INT
EXT
REMOTE
AUTO
IC1
IC2
IC3
BA-6 (TO QB-3)
BA-5 (TO QB-2)
BA-4 (TO QB-1)
BA-3 (TO QA-3)
BA-2 (TO QA-2)
BA-1 (TO QA-1)
BA
SONY

▨ : Conductor side pattern
▨ : Component side pattern

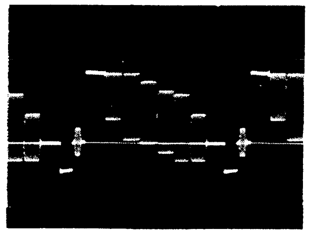
BA board (SYNC SELECT & SYNC SEP,HOOK UP)


BA (VIDEO & SYNC INPUTS)
(To QA-1) BA-1
VIDEO A
(To QA-2) BA-2
VIDEO B
(To QA-3) BA-3
EXT SYNC
(To QB-1) BA-4
R/R-Y
(To QB-2) BA-5
TEST G/Y
(To QB-3) BA-6
B/B-Y
Q101
Q102
Q103
Q104
Q105
Q201
Q202
Q203
Q204
Q205
Q301
Q302
Q303
Q304
Q305
Q401
Q402
Q403
Q404
Q405
Q501
Q502
Q503
Q504
Q505
Q601
Q602
Q603
Q604
Q605
Q1
Q2
Q3
Q4
Q5
Q6
IC1
IC2
IC3
D1
D2
D4
CH-B
CH-A
TP201
TP101
TP501
TP401
TP601
GREEN
RED
BLUE
TP1 COMP VIDEO
TP2
12V
-12V
CP1
CP2
CP3
CP4
CP5
CP6
CP7
COMP. SYNC
TP701
TP702
V.SYNC
Q701
Q702
Q703
Q704
Q705
Q706
Q707
Q708
Q709
Q710
Q711
Q712
Q713
Q714
Q715
Q716
Q717
A11 S. SW
A12 RGB. SW
20 +12V
A18 COMP OUT
A9 Y. IN
B11 INH
1 E
22 E
21 -12V
A19 T SW
A17 KILLER
B18 A/B R
B19 A/B L
B13 INT/EXT R
B14 INT/EXT L
B17 AUTO/B/W L
B16 AUTO/B/W R
B15 LOCAL/REMOTE
AB7 R OUT
AB8 E
AB5 G OUT
AB6 E
AB3 B OUT
AB4 E
A2 COMP SYNC
B2 V. S. S
B4 B7
BG B9
BH A4
HB-2
BB A4
BB B4
B2 A4
B2 B4
BG B4
BC/BD/BM A4
BC/BD/BM B4
B3 A4
B3 B4
B4 A4
B4 B4
BA B9
BG A2
BH B2
B3 A2
BB B5
BB B13
B2 B13
BG A3
BJ A7
BC B13
B3 B13
B4 B13
V-I
HB-4
BG A9
BH A3
BH A5
BG A11
BH A7
BB B2
B2 B2
BJ B8
BC/BD/BM B2
B3 B2
BJ B2

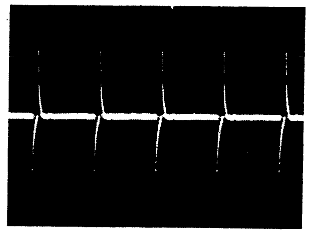

C716 0.01
Q6
Q5
D4
A11 S. SW
A12 RGB. SW
B4 B7
BG B9
BH A4
HB-2
20 +12V
BB A4
BB B4
B2 A4
B2 B4
BG B4
BC/BD/BM A4
BC/BD/BMB4
B3 A4
B3 B4
B4 A4
B4 B4
BA B9
BG A2
BH B2
B3 A2
BB B5
12V
R9 100
R13 47K
C6 47/16V
C31 C39 0.01 (F)
C12-18
C11 330 16V
C32-38 10 16V
IC2
C8 47/16V
① TP1 COMP VIDEO
R8 2.7K
R12 100
C4 10/16V
C5 47/16V
D1
R4 47K
R5 100
R6 18K
Q2
R7 2.7K
C19 10/16V
C717 100P
R707 10K
R10 100
C7 47 16V
A18 COMP OUT
A9 Y. IN
B11 IN H
1 E
22 E
21 -12V
C71-77 0.01(F)
C52-57 10/16V
C51 330 16V
-12V
BB B13
B2 B13
BG A3
BJ A7
BC B13
B3 B13
B4 B13
A19 T SW
A17 KILLER
B18 A/B R
B19 A/B L
B13 INT/EXT R
B14 INT/EXT L
B17 AUTO/B/W L
B16 AUTO/B/W R
B15 LOCAL/REMOTE
V-1
HB-4
R14 10K
C20 0.01 (F)
CP5
CP4
CP3
CP2
CP1
IC3
TP2
AB7 R OUT
AB8 E
AB5 G OUT
AB6 E
AB3 B OUT
AB4 E
BG A9
BH A3
BH A5
BG A11
BH A7
BB B2
B2 B2
BJ B8
BC/BD/BM B2
B3 B2
BJ B2
12V
R731 2.7K
Q715
COMP. SYNC
TP701 ③
R738 100K
Q717
R732 2.7K
R733 22K
R734 2.2K
R735 22K
Q716
D708
Q714
C710 6800P
C712 1000P
TP702 ④
R739 22K
R737 100
C713 1/50V
V.SYNC
C711 0.015
R736 4.7K
A2 COMP SYNC
B2 V. S. S

BA BOARD

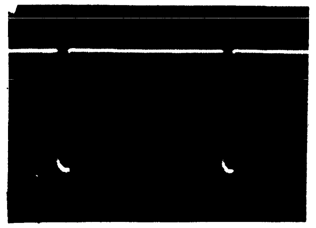
IC1	CX-894	INPUT SELECT
2	CX-894	SYNC SELECT
3	uPD4053BC	LOCAL/REMOTE SW
Q1	DTC144ES	INPUT SELECT CONTROL
2	2SA844	BUFF
3	DTC144ES	KILLER
4	DTC144ES	KILLER
5	DTC144ES	SYNC SELECT CONTROL
6	DTA144ES	INT/EXT CONTROL
101	2SC2668	VIDEO A AMP
102	2SC2668	VIDEO A AMP
103	2SC2668	VIDEO A AMP
104	2SA844	VIDEO A AMP
105	2SC2668	VIDEO A AMP
201	2SC2668	VIDEO B AMP
202	2SC2668	VIDEO B AMP
203	2SC2668	VIDEO B AMP
204	2SA844	VIDEO B AMP
205	2SC2668	VIDEO B AMP
301	2SC2668	EXT SYNC AMP
302	2SC2668	EXT SYNC AMP
303	2SC2668	EXT SYNC AMP
304	2SA844	EXT SYNC AMP
305	2SC2668	EXT SYNC AMP
401	2SC2668	R-Y/R AMP
402	2SC2668	R-Y/R AMP
403	2SC2668	R-Y/R AMP
404	2SA844	R-Y/R AMP
405	2SC2668	R-Y/R AMP
501	2SC2668	TEST/Y/G AMP
502	2SC2668	TEST/Y/G AMP
503	2SC2668	TEST/Y/G AMP
504	2SA844	TEST/Y/G AMP
505	2SC2668	TEST/Y/G AMP
601	2SC2668	B-Y/B AMP
602	2SC2668	B-Y/B AMP
Q603	2SC2668	B-Y/B AMP
604	2SA844-D	B-Y/B AMP
605	2SC2668	B-Y/B AMP
701	2SA1048	SYNC AGC
702	2SC2785	SYNC AGC
703	2SC2785	SYNC AGC
704	2SC2785	SYNC AGC
705	2SC2785	SYNC AGC
706	2SA1048	SYNC AGC
707	2SC2785	SYNC AGC
708	2SA1048	SYNC AGC
709	2SC2785	SYNC AGC
710	2SA1115	SYNC AGC
711	2SA1048	SYNC AGC
712	2SA1115	SYNC AGC
713	2SA1048	COMP SYNC SEP
714	2SC2785	COMP SYNC SEP
715	2SC3068	COMP SYNC SEP
716	2SC2785	V SYNC SEP
717	2SA1115	V SYNC SEP
D1	RD3.0EB1	+9V REG
2	MC921	INPUT SELECT CONTROL
4	MC911	SYNC SELECT CONTROL
701	1SS119	SYNC AGC
702	RD4.3EB2	-7.5V REG
703	1SS119	SYNC AGC
704	1SS119	SYNC AGC
705	1SS119	SYNC AGC
706	1SS119	SYNC AGC
707	1SS119	COMP SYNC SEP
708	1SS119	COMP SYNC SEP
709	1SS119	SYNC AGC
710	1SS119	SYNC AGC



① 1Vp-p (H)
② 1Vp-p (H)



④ 12 Vp-p (V)

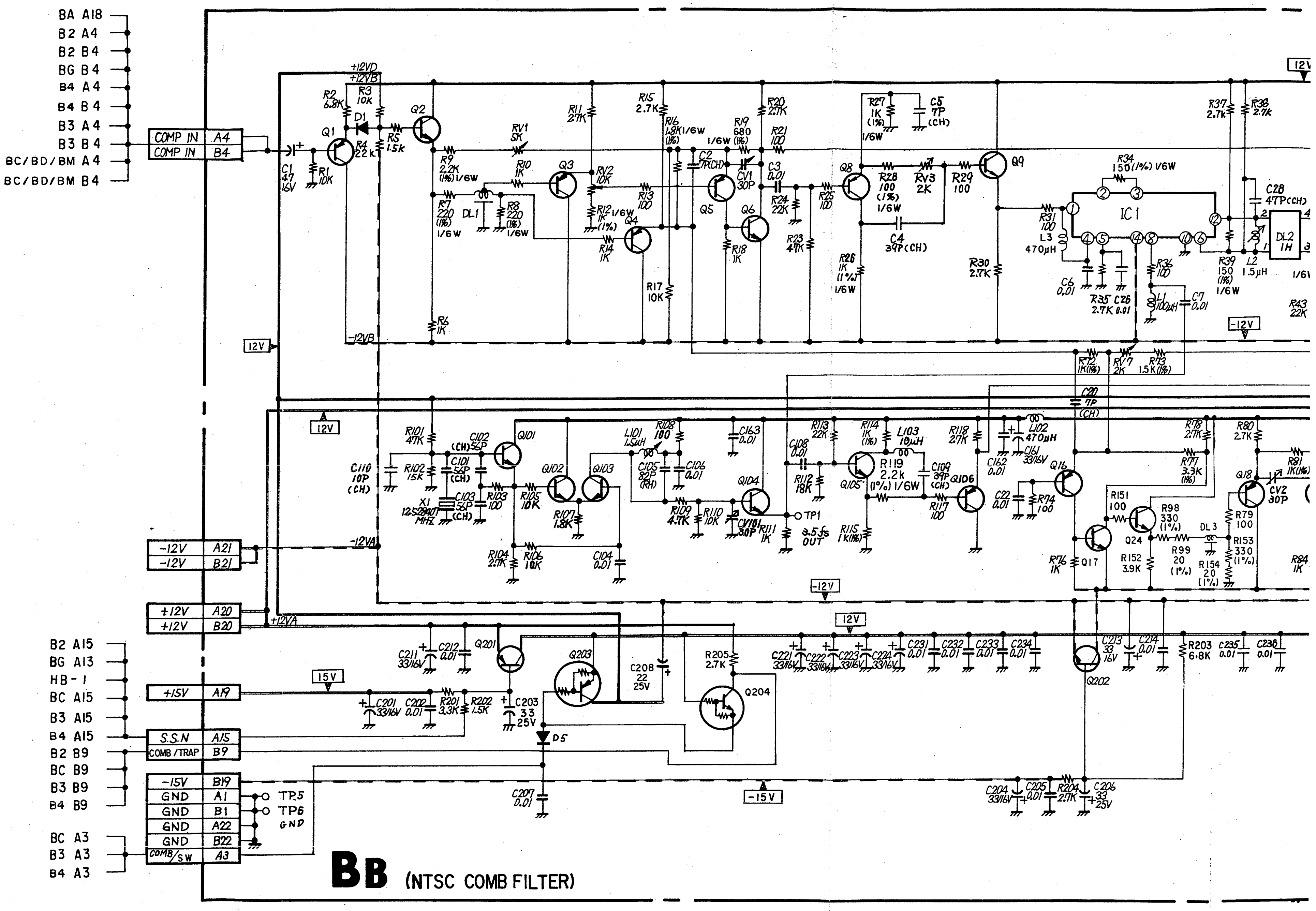


③ 12Vp-p (H)

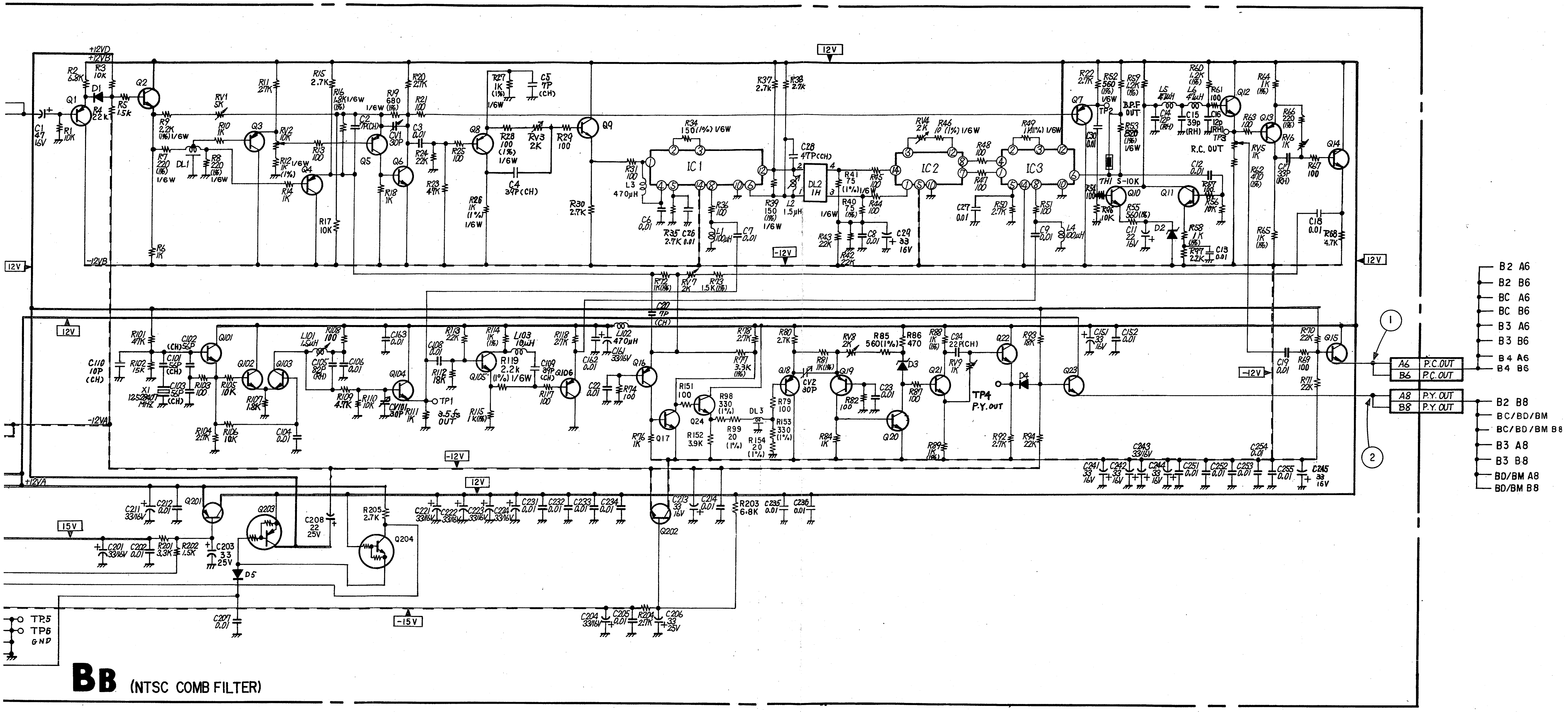
BB BOARD

IC1	MC1496P	MODULATOR
2	uA733CN	AMP
3	MC1496P	DEMODULATOR
Q1	2SA844	BUFF
2	2SC403SP	BUFF
3	2SA844	140NS DELAY
4	2SA844	280NS DELAY
5	2SA844	CHROMA PROCESS
6	2SC403SP	CHROMA PROCESS
7	2SA844	B.P.F. BUFF
8	2SA844	CHROMA PROCESS
9	2SC403SP	CHROMA PROCESS
10	2SC403SP	P.C. PROCESS
11	2SC403SP	P.C. PROCESS
12	2SC403SP	P.C. BUFF
13	2SA844	P.C. DELAY
14	2SC403SP	P.C. DELAY
15	2SC3068	P.C. BUFF
16	2SA844	Y PROCESS
17	2SC403SP	Y PROCESS
18	2SA844	Y BUFF
19	2SA844	Y AMP
20	2SC403SP	Y AMP
21	2SC403SP	Y DELAY
22	2SC403SP	Y DELAY
23	2SC3068	Y BUFF
24	2SC403SP	
101	2SC403SP	12.5MHz OSC.
102	2SC403SP	12.5MHz OSC.
103	2SC403SP	12.5MHz OSC.
104	2SC403SP	OSC. BUFF
105	2SC403SP	OSC. PHASE
106	2SA844	OSC. PHASE
201	2SB734	NTSC SW
202	2SD774	NTSC SW
203	DTA124ES	COMB SW
204	DTC144ES	COMB SW
D1	1SS119	INPUT SW
2	RD8.2ES-T1B	P.C. PROCESS
3	RD5.6ES-T1B	Y AMP
4	1SS119	Y SW
5	1SS119	COMB SW

BB board (NTSC COMB FILTER) (BVM-1315 ONLY)

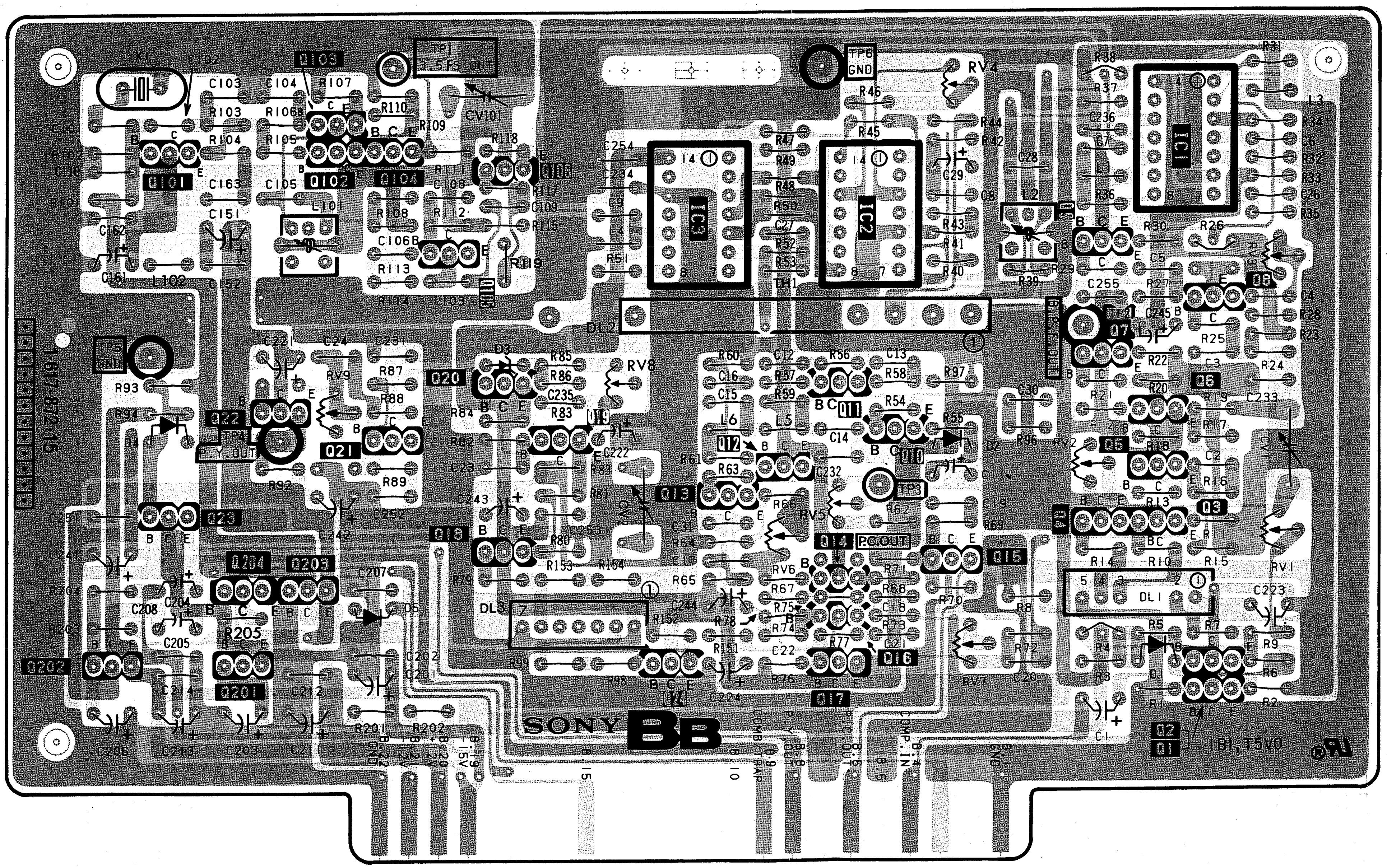

BA A18
B2 A4
B2 B4
BG B4
B4 A4
B4 B4
B3 A4
B3 B4
BC/BD/BM A4
BC/BD/BM B4
COMP IN A4
COMP IN B4
+12VD
+12VB
-12VB
12V
-12V A21
-12V B21
+12V A20
+12V B20
+12VA
-12VA
B2 A15
BG A13
HB-1
BC A15
B3 A15
B4 A15
B2 B9
BC B9
B3 B9
B4 B9
BC A3
B3 A3
B4 A3
+15V A19
15V
S.S.N A15
COMB/TRAP B9
-15V B19
GND A1
GND B1
GND A22
GND B22
COMB/SW A3
TP5
TP6
GND
-15V
Q1
Q2
Q3
Q4
Q5
Q6
Q8
Q9
Q16
Q17
Q18
Q24
Q101
Q102
Q103
Q104
Q105
Q106
Q201
Q202
Q203
Q204
IC1
DL1
DL2 1H
DL3
D1
D5
X1 12.5MHz
RV1 5K
RV3 2K
RV7 2K
CV1 30P
CV2 30P
L1 100μH
L2 1.5μH
L3 470μH
L101 1.5μH
L102 470μH
L103 10μH
TP1
3.58fs OUT
R1 10K
R2 6.8K
R3 10K
R4 22K
R5 1.5K
R9 2.2K
R11 2.7K
R15 2.7K
R16 1.8K 1/6W
R17 10K
R19 680
R20 2.7K
R28 100
R29 100
R30 2.7K
R31 100
R34 150(1%) 1/6W
R37 2.7K
R38 2.7K
R39 150
R43 22K
R119 2.2k (1%) 1/6W
R151 100
R152 3.9K
R153 330
R154 20
R98 330
R99 20
R203 6.8K
R205 2.7K
C1 47 16V
C4 39P(CH)
C5 7P (CH)
C28 47P(CH)
C110 10P (CH)
C203 33 25V
C206 33 25V
C208 22 25V
C213 33 16V
BB (NTSC COMB FILTER)

BB board (NTSC COMB FILTER) (BVM-1315 ONLY)


BB (NTSC COMB FILTER)
12V
-12V
15V
-15V
+12VD
+12VB
-12VB
-12VA
+12VA
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
Q101
Q102
Q103
Q104
Q105
Q106
Q201
Q202
Q203
Q204
IC1
IC2
IC3
DL1
DL2 1H
DL3
D1
D2
D3
D4
D5
X1 12.58MHz
RV1 5K
RV3 2K
RV4 2K
RV5 1K
RV6 1K
RV7 2K
RV8 2K
RV9 1K
CV1 30P
CV2 30P
CV101 30P
TH1 5-10K
L1 100μH
L2 1.5μH
L3 470μH
L4 100μH
L5 47μH
L6 47μH
L101 1.5μH
L102 470μH
L103 10μH
TP1 3.58 OUT
TP2 B.P.F OUT
TP3 R.C. OUT
TP4 P.Y. OUT
TP5
TP6
GND
A6 P.C.OUT
B6 P.C.OUT
A8 P.Y.OUT
B8 P.Y.OUT
B2 A6
B2 B6
BC A6
BC B6
B3 A6
B3 B6
B4 A6
B4 B6
B2 B8
BC/BD/BM
BC/BD/BM B8
B3 A8
B3 B8
BD/BM A8
BD/BM B8
①
②

BB board (NTSC COM FILTER) (BVM-1315 ONLY)

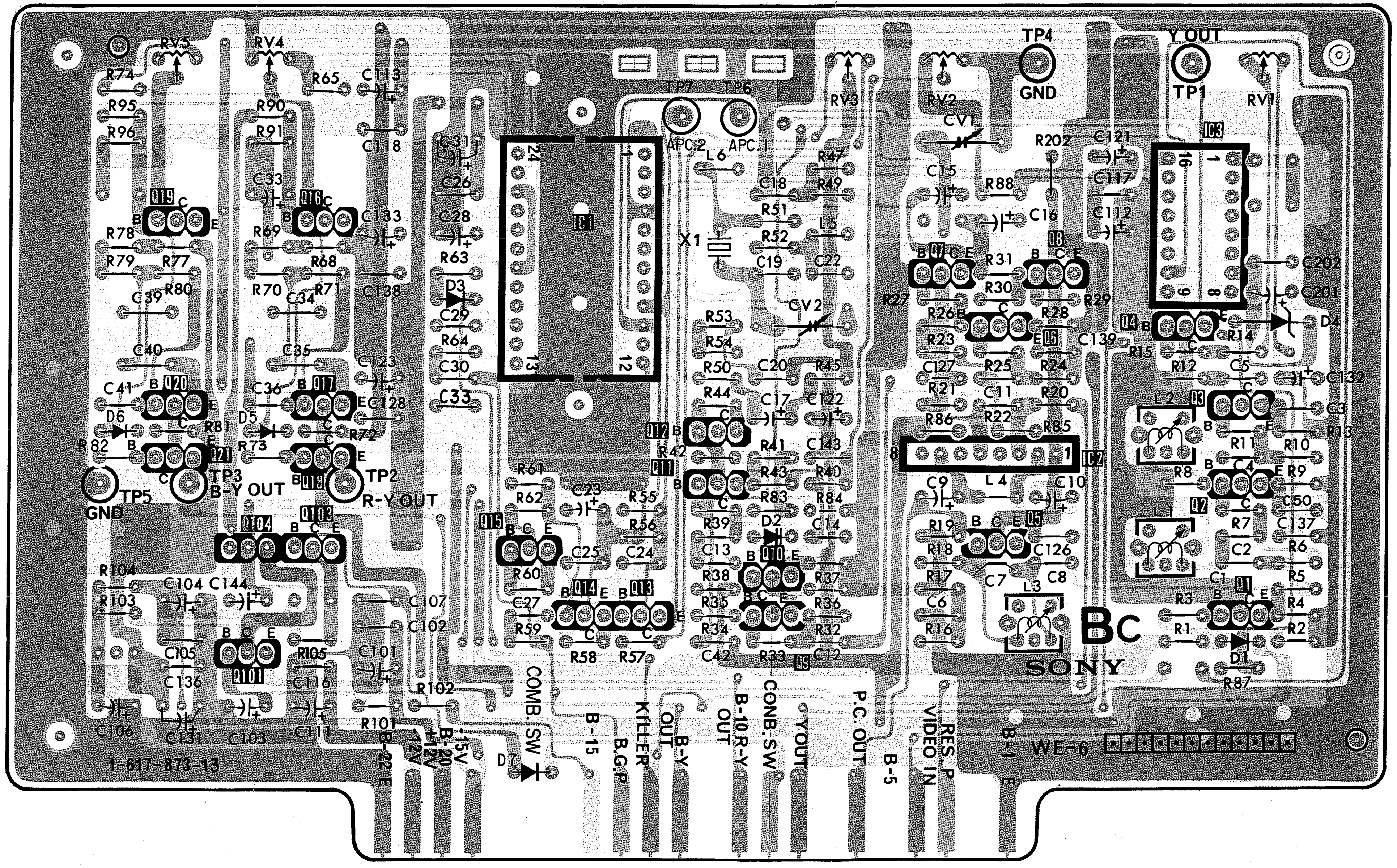
IC	3 2 1
Q	202 101 23 201 204 22 103 102 203 104 21 105 106 20 18 19 24 13 12 11 14 16 17 10 15 9 7 4 6 5 3 8 2 1
D	4 5 3 2 1
TP ADJ	TP5 TP4 RV9 TP1 CV101 RV8 CV2 RV6 TP6 RV5 TP3 RV4 RV7 TP2 RV2 RV3 CV1 RV1


X1
C102
Q103
TP1 3.5FS OUT
CV101
TP6 GND
RV4
IC3
IC2
IC1
DL2
DL3
DL1
TP5 GND
TP4 P.Y.OUT
TP3
TP2
TP1
RV1
RV2
RV3
RV5
RV6
RV7
RV8
RV9
CV1
CV2
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
Q101
Q102
Q104
Q105
Q106
Q201
Q202
Q203
Q204
R205
P.C.OUT
1-617-872-15
SONY BB
B-22 GND
B-21
B-20
B-19 -15V
B-15
B-10 COMB/TRAP
B-9
B-8 P.Y.OUT
B-6 P.C.OUT
B-5
B-4 COMP.IN
B-1 GND
IBI, T5V0

- ▓: Conductor side pattern
- ░: Component side pattern

BC Board (NTSC DECODER Y. TRAP) (BVM-1315 ONLY)

IC	1, 2, 3
Q	19, 20, 21, 104, 101, 16, 17, 18, 103, 15, 14, 13, 12, 11, 10, 9, 7, 6, 5, 8, 4, 3, 2, 1
D	6, 5, 3, 7, 2, 1, 4
TP ADJ	TP5, RV5, TP3, RV4, TP2, TP7, TP6, CV2, RV3, RV2, CV1, TP4, TP1, RV1

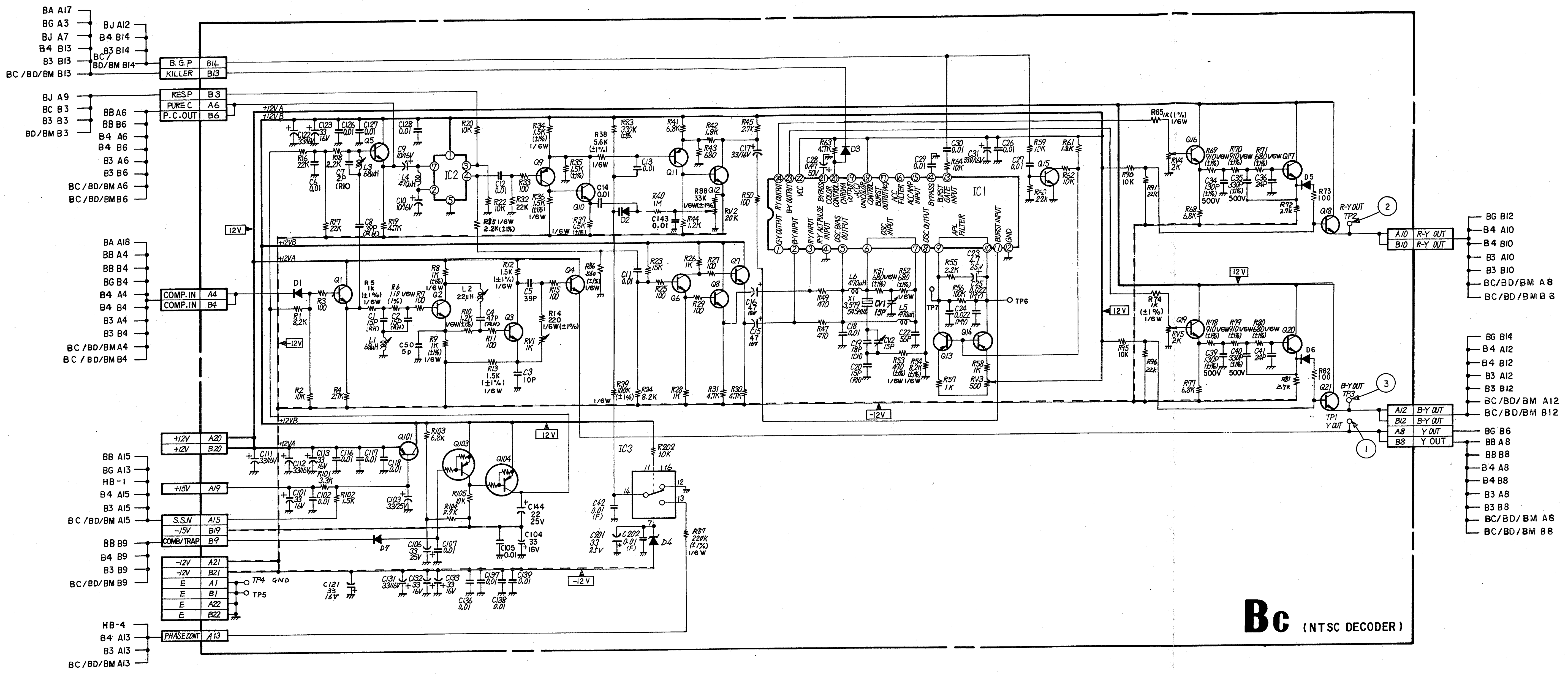


RV5
RV4
R74
R95
R96
R65
C113
R90
R91
C118
C33
Q19
Q16
C133
R78
R69
R79
R77
R68
R80
R70
R71
C39
C34
C138
C40
C35
C123
C41
Q20
C36
Q17
C128
D6
R81
D5
R82
Q21
R73
Q18
R72
TP3
B-Y OUT
TP2
R-Y OUT
TP5
GND
Q104
Q103
R104
R103
C104
C144
C105
Q101
R105
C101
C136
C116
C106
C131
C103
C111
R101
R102
C107
C102
1-617-873-13
C31
C26
C28
R63
D3
C29
R64
C30
C33
IC1
TP7
TP6
APC.2
APC.1
L6
X1
C18
R47
R49
R51
R52
L5
C19
C22
CV2
R53
R54
R50
C20
R45
R44
C17
C122
Q12
R42
R41
C143
Q11
R43
R40
R83
R84
R61
R62
C23
R55
R56
Q15
C25
C24
R60
R39
D2
C14
C13
Q10
R38
R37
Q14
Q13
R35
R36
C27
R59
R34
R32
R58
R57
C42
R33
Q9
C12
RV3
RV2
CV1
TP4
GND
C15
R88
R202
C121
C117
C16
C112
Q7
R31
Q8
R30
R27
R26
R28
R29
R23
Q6
C139
C127
R25
R24
R21
C11
R20
R86
R22
R85
IC2
C9
L4
C10
R19
Q5
R18
C126
R17
C7
L3
C8
C6
R16
Bc
SONY
Y OUT
TP1
RV1
IC3
C202
C201
Q4
R14
D4
R15
R12
C5
C132
L2
Q3
C3
R13
R11
R10
R8
C4
R9
Q2
C50
L1
R7
C137
C2
R6
C1
Q1
R5
R3
R4
R1
R2
D1
R87
WE-6
COMB.SW
B-15
B.G.P
KILLER
B-Y OUT
B-10 R-Y OUT
CONB.SW
Y OUT
P.C. OUT
B-5
VIDEO IN
RES. P
B-1
E
B-22
E
12V
B-20
+12V
-15V
D7

● ▨ : Conductor side pattern

● ░ : Component side pattern

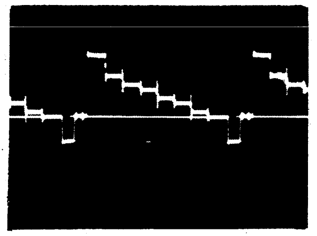
BC Board (NTSC DECODER Y, TRAP) (BVM-1315 ONLY)

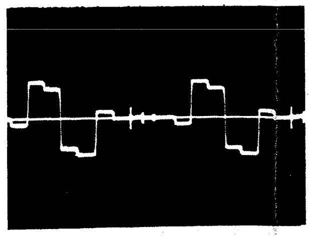

BA A17
BG A3
BJ A7
B4 B13
B3 B13
BC/BD/BM B13
BJ A12
B4 B14
B3 B14
BC/BD/BM B14
B.G.P B14
KILLER B13
BJ A9
BC B3
B3 B3
BD/BM B3
BB A6
BB B6
B4 A6
B4 B6
B3 A6
B3 B6
BC/BD/BM A6
BC/BD/BM B6
RESP B3
PURE C A6
P.C.OUT B6
+12V A
+12V B
12V
BA A18
BB A4
BB B4
BG B4
B4 A4
B4 B4
B3 A4
B3 B4
BC/BD/BM A4
BC/BD/BM B4
COMP.IN A4
COMP.IN B4
-12V
IC1
IC2
IC3
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q101
Q103
Q104
D1
D2
D3
D4
D5
D6
D7
R-Y OUTPUT
B-Y OUTPUT
VCC
BYPASS
COLOR CONTROL
CHROMA OUTPUT
UNICOLOR CONTROL
BURST OUTPUT
ACC FILTER
ACC AMP INPUT
BYPASS
BURST GATE INPUT
G-Y OUTPUT
B-Y INPUT
R-Y INPUT
R-Y ALT PULSE INPUT
OSC BIAS OUTPUT
OSC INPUT
OSC OUTPUT
APL FILTER
BURST INPUT
GND
TP1
TP2
TP3
TP4
TP5
TP6
TP7
R-Y OUT
B-Y OUT
Y OUT
A10 R-Y OUT
B10 R-Y OUT
A12 B-Y OUT
B12 B-Y OUT
A8 Y OUT
B8 Y OUT
BG B12
B4 A10
B4 B10
B3 A10
B3 B10
BC/BD/BM A8
BC/BD/BM B8
BG B14
B4 A12
B4 B12
B3 A12
B3 B12
BC/BD/BM A12
BC/BD/BM B12
BG B6
BB A8
BB B8
B4 A8
B4 B8
B3 A8
B3 B8
BC/BD/BM A8
BC/BD/BM B8
BB A15
BG A13
HB-1
B4 A15
B3 A15
BC/BD/BM A15
+12V A20
+12V B20
+15V A19
S.S.N A15
-15V B19
COMB/TRAP B9
BB B9
B4 B9
B3 B9
BC/BD/BM B9
-12V A21
-12V B21
E A1
E B1
E A22
E B22
GND
HB-4
B4 A13
B3 A13
BC/BD/BM A13
PHASE CONT A13
① ② ③
Bc (NTSC DECODER)

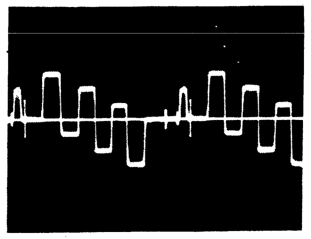
BC BOARD

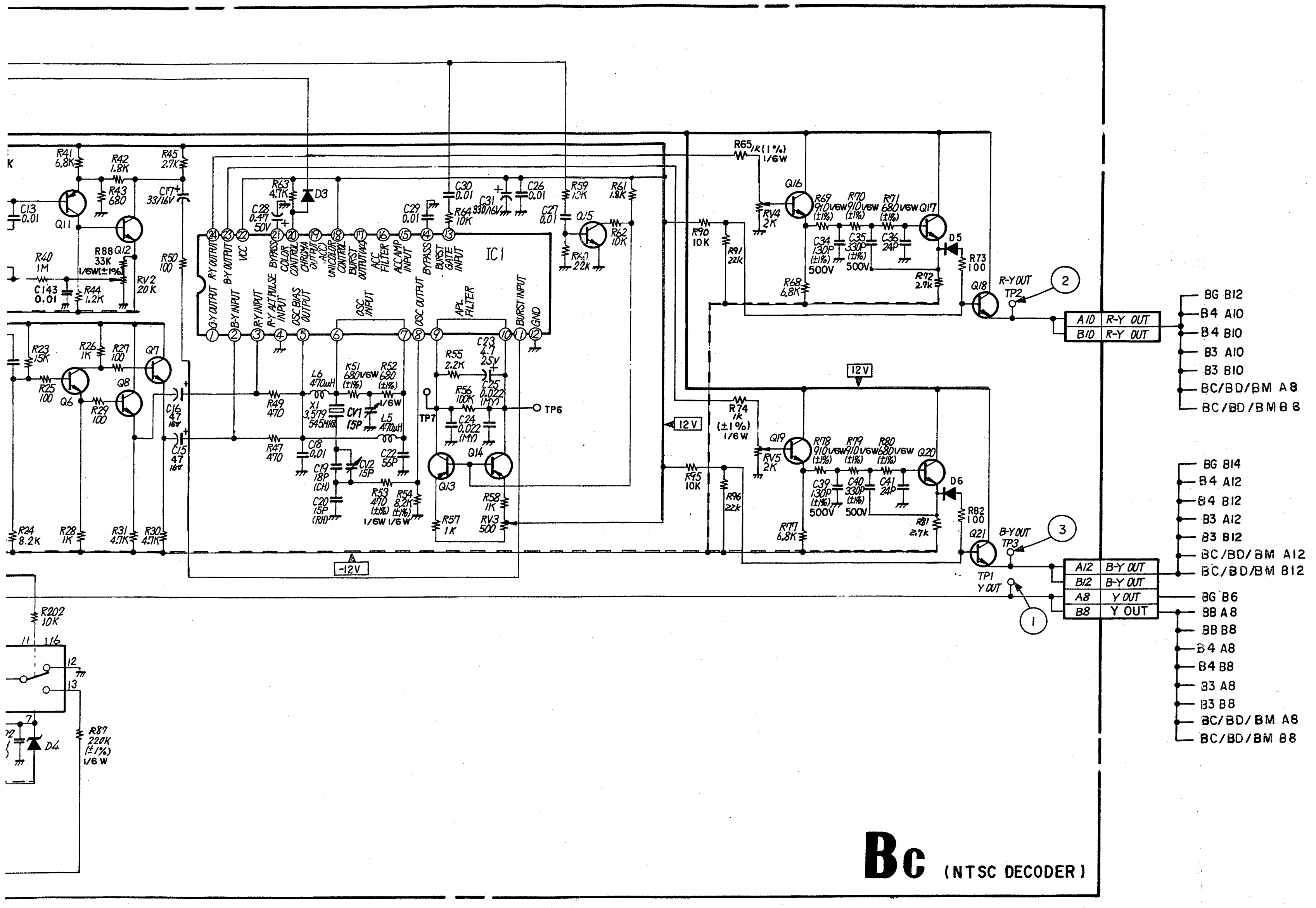
IC1	TA7193P	DEMODULATOR
2	CX20061	RESIDUAL SWITCH
3	uPD4053BC	ANALOG SWITCH
Q1	2SC403SP	BUFF.
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECT
4	2SC3068	BUFF.
5	2SC3068	BUFF.
6	2SC403SP	AMP.
7	2SC403SP	BUFF.
8	2SC403SP	BUFF.
9	2SA844	PHASE CONTROL
10	2SC403SP	PHASE CONTROL
11	2SA844	PHASE CONTROL
12	2SC403SP	PHASE CONTROL
13	2SA844	APL FILTER

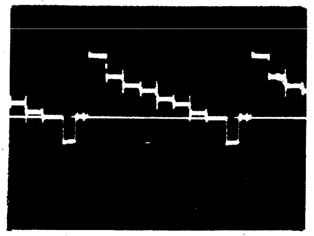
14	2SA844	APL FILTER
15	2SC403SP	APL FILTER
16	2SC403SP	LOW PASS FILTER
17	2SC403SP	LOW PASS FILTER
18	2SC3068	BUFF.
19	2SC403SP	LOW PASS FILTER
20	2SC403SP	LOW PASS FILTER
21	2SC3068	BUFF.
101	2SB734	SYSTEM SW.
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1T25	PHASE CONTROL
3	1SS119	KILLER SWITCH
4	RD9.1EB2	SWITCH BIAS.
5	1SS119	SYSTEM SWITCH
6	1SS119	SYSTEM SWITCH
7	1SS119	PROTECTOR


① 1Vp-p (H)

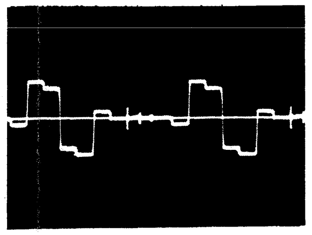

② 0.3Vp-p (H)


③ 0.36 Vp-p (H)

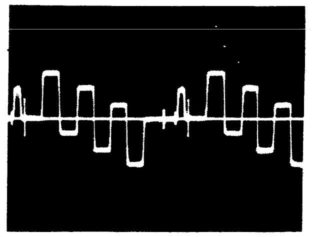

Bc (NTSC DECODER)
IC1
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q6
Q7
Q8
D3
D4
D5
D6
12V
-12V
R-Y OUT TP2
B-Y OUT TP3
TP1 Y OUT
TP6
TP7
A10 R-Y OUT
B10 R-Y OUT
A12 B-Y OUT
B12 B-Y OUT
A8 Y OUT
B8 Y OUT
BG B12
B4 A10
B4 B10
B3 A10
B3 B10
BC/BD/BM A8
BC/BD/BM B8
BG B14
B4 A12
B4 B12
B3 A12
B3 B12
BC/BD/BM A12
BC/BD/BM B12
BG B6
BB A8
BB B8
B4 A8
B4 B8
B3 A8
B3 B8
BC/BD/BM A8
BC/BD/BM B8
①
②
③



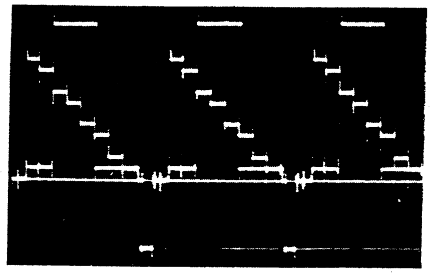
① 1Vp-p (H)



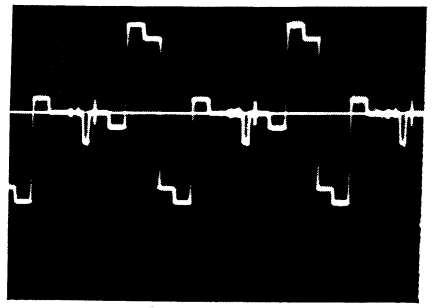
② 0.3Vp-p (H)



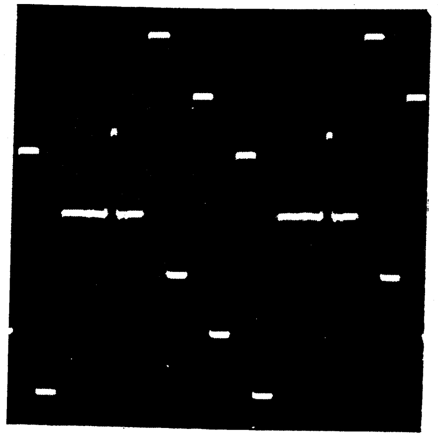
③ 0.36 Vp-p (H)



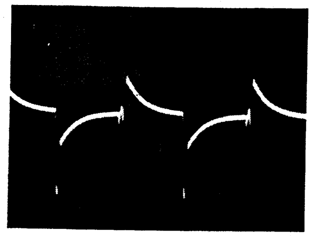
① 1Vp-p (H)



② 0.3Vp-p
③ 0.32Vp-p
④ 0.32Vp-p
⑤ 0.36Vp-p



⑥ 0.38Vp-p
⑦ 0.38Vp-p
⑧ 0.39Vp-p
⑨ 0.42Vp-p

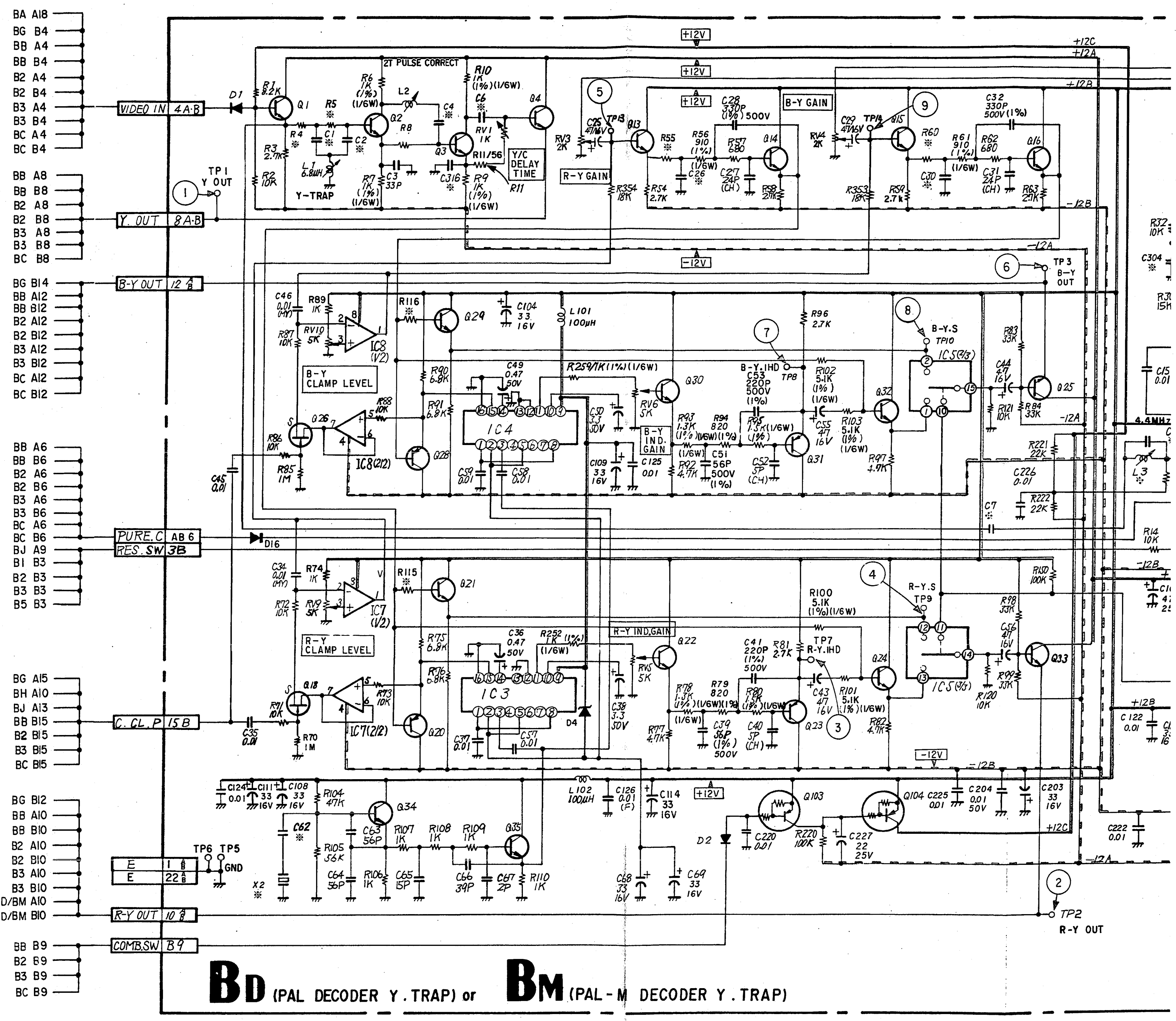


⑩ 0.26Vp-p (H)
⑪ 0.26Vp-p (H)

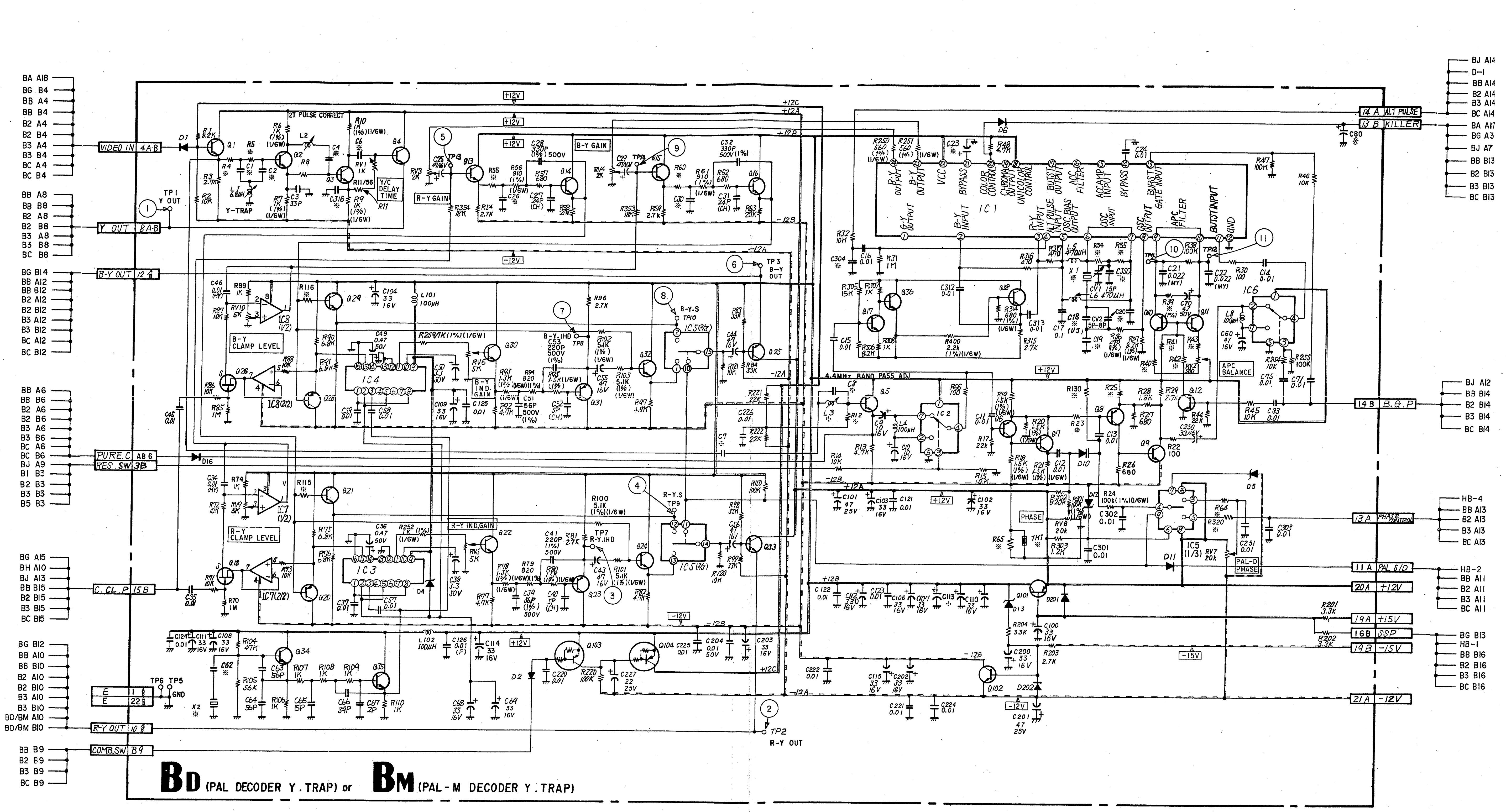
※NOTE

Model / Ref	BD (PAL)	BM (PAL-M)
C1	10P 0.5P 50V	15P 5% 50V
C2	10P 0.5P 50V	15P 5% 50V
C3	33PF 5% 50V	———
C4	47P 5% 50V	39P 5% 50V
C6	68P 5% 50V	56P 5% 50V
C7	33P 5% 50V	39P 5% 50V
C8	6P 0.5P 50V	2P 0.25P 50V
C19	1-102-668-00 15P 5% (RH) 50V	1-102-880-00 15P 5% (UJ) 50V
C20	68P 5% (UJ) 50V	56P 5% (UJ) 50V
C23	ELECT 1 20% 50V	FILM 0.01 5% 50V
C26	160P 1% 500V	130P 1% 500V
C30	160P 1% 500V	130P 1% 500V
C62	24P 5% 50V	JW
C80	———	1 20% 50V
C304	10P 0.5P 50V	———
C316	2P 0.25P 50V	10P 0.5P 50V
C350	33P 5% (UJ) 50V	22P 5% (UJ) 50V
D15	———	1SS119
L3	33μH	68μH
R4	1.5K 1% 1/6W	1K 1% 1/6W
R5	82 1% 1/6W	110 1% 1/6W
R8	1.2K 1% 1/6W	1.8K 1% 1/6W
R11	56 1% 1/6W	130 1% 1/6W
R12	1.8K 1% 1/6W	2.2K 1% 1/6W
R23	6.8K 1% 1/6W	5.6K 1% 1/6W
R28	1.8K 5% 1/4W	3.3K 5% 1/4W
R34	270 1% 1/6w	680 1% 1/6W
R35	270 1% 1/6W	680 1% 1/6W
R40	1K 1% 1/6W	1K 5% 1/4W
R41	2.2K 1% 1/6W	2.2K 5% 1/6W
R42	10K 1% 1/6W	10K 5% 1/4W
R43	1K 1% 1/6W	1K 5% 1/4W
R55	750 1% 1/6W	910 1% 1/6W
R60	750 1% 1/6W	910 1% 1/6W
R64	220K 1% 1/6W	1K 5% 1/4W
R65	3.9K 1% 1/6W	2.2K 1% 1/6W
R115	5.1K 1% 1/6W	2.2K 1% 1/6W
R116	5.1K 1% 1/6W	2.2K 1% 1/6W
R130	220K 1% 1/6W	470K 1% 1/6W
R309	10 5% 1/4W	———
R320	130 K 1% 1/6W	360k 1% 1/6W
TH1	———	THERMISTOR 10K
X1	4.43MHz	3.58MHz
X2	10.64MHz	10.717MHz
C113	ELECT 33 20% 16V	———
R25	6.8K 5% 1/4W	4.7K 5% 1/4W
R26	680 5% 1/4W	1.2K 5% 1/4W
R39	1.5K 1% 1/6W	2.2K 1% 1/6W
C18	12PF 5% 50W	15PF 5% 50V

BD board (PAL DECODER Y.TRAP) (BVM-1415P ONLY)
BM board (PAL-M DECODER Y.TRAP) (BVM-1415PM ONLY)

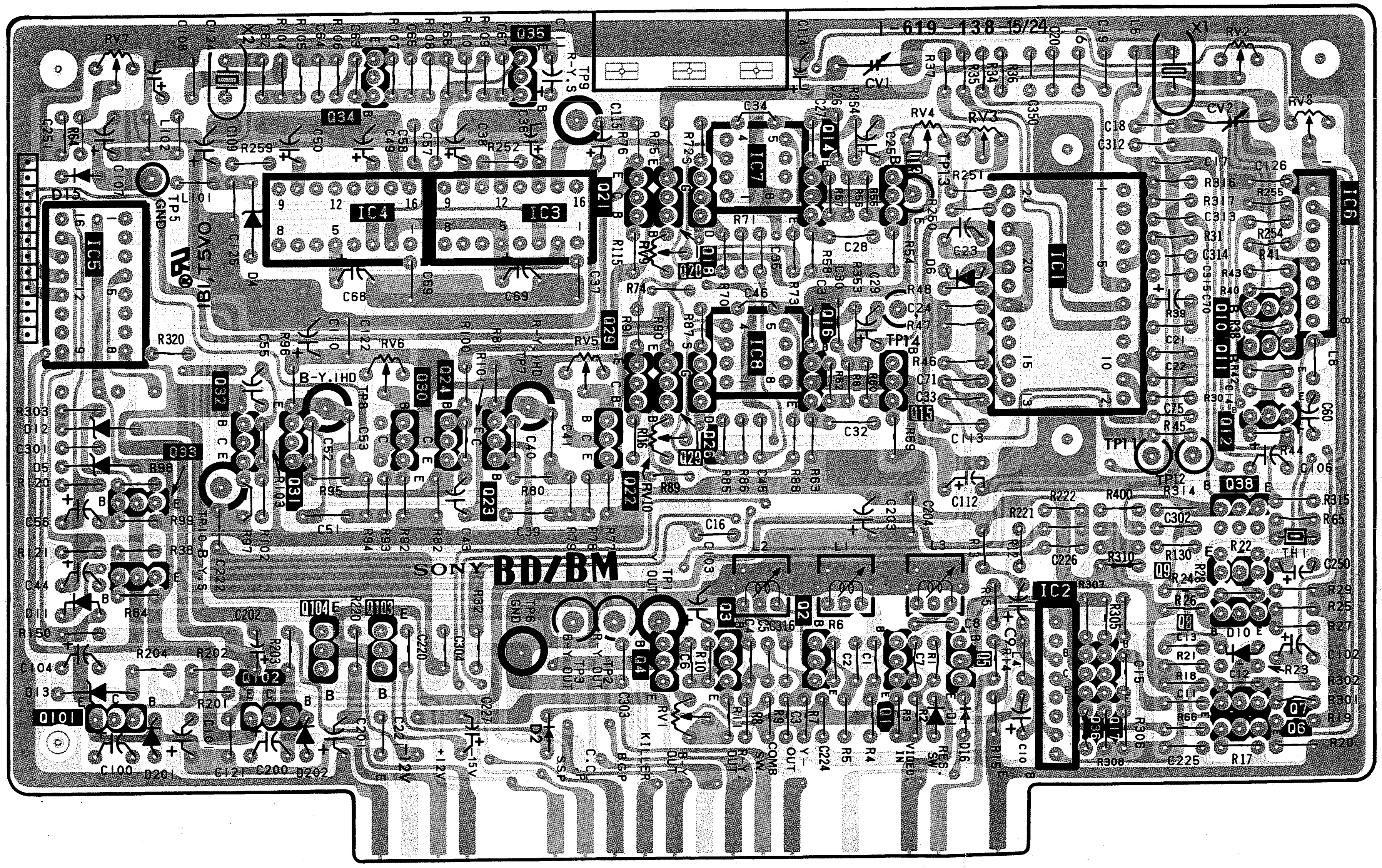

BD (PAL DECODER Y.TRAP) or BM (PAL-M DECODER Y.TRAP)
VIDEO IN 4A·B
Y OUT 8A·B
B-Y OUT 12 A/B
PURE.C AB 6
RES.SW 3B
C.CL.P 15B
R-Y OUT 10 A/B
COMB.SW B9
TP1 Y OUT
TP3 B-Y OUT
TP2 R-Y OUT
TP9 R-Y.S
TP10 B-Y.S
TP5 GND
TP6
Y-TRAP
2T PULSE CORRECT
Y/C DELAY TIME
R-Y GAIN
B-Y GAIN
B-Y CLAMP LEVEL
R-Y CLAMP LEVEL
B-Y IND. GAIN
R-Y IND.GAIN
B-Y.IHD
R-Y.IHD
IC4
IC3
IC5(1/2)
IC5(2/2)
IC7(1/2)
IC7(2/2)
IC8(1/2)
IC8(2/2)
+12V
-12V
+12C
+12A
+12B
-12A
-12B

BD board (PAL DECODER Y.TRAP) (BVM-1415P ONLY)
BM board (PAL-M DECODER Y.TRAP) (BVM-1415PM ONLY)


BA A18
BG B4
BB A4
BB B4
B2 A4
B2 B4
B3 A4
B3 B4
BC A4
BC B4
VIDEO IN 4A·B
BB A8
BB B8
B2 A8
B2 B8
B3 A8
B3 B8
BC B8
TP1 Y OUT
Y OUT 8A·B
BG B14
BB A12
BB B12
B2 A12
B2 B12
B3 A12
B3 B12
BC A12
BC B12
B-Y OUT 12 A·B
B-Y CLAMP LEVEL
R-Y CLAMP LEVEL
BB A6
BB B6
B2 A6
B2 B6
B3 A6
B3 B6
BC A6
BC B6
BJ A9
BI B3
B2 B3
B3 B3
B5 B3
PURE.C AB 6
RES.SW 3B
BG A15
BH A10
BJ A13
BB B15
B2 B15
B3 B15
BC B15
C.CL.P 15B
BG B12
BB A10
BB B10
B2 A10
B2 B10
B3 A10
B3 B10
BD/BM A10
BD/BM B10
R-Y OUT 10 B
BB B9
B2 B9
B3 B9
BC B9
COMB.SW B9
TP6 TP5
GND
2T PULSE CORRECT
Y-TRAP
Y/C DELAY TIME
R-Y GAIN
B-Y GAIN
B-Y IND. GAIN
R-Y IND.GAIN
B-Y.IHD
R-Y.IHD
TP3 B-Y OUT
TP2 R-Y OUT
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
4.4MHz BAND PASS ADJ
APC BALANCE
PHASE
PAL-D PHASE
R-Y OUTPUT
B-Y OUTPUT
VCC
BYPASS
COLOR CONTROL
CHROMA OUTPUT
UNICOLOR CONTROL
BURST OUTPUT
ACC FILTER
ACCAMP INPUT
BYPASS
BURST GATE INPUT
G-Y OUTPUT
B-Y INPUT
R-Y INPUT
ALT PULSE INPUT
OSC BIAS OUTPUT
OSC INPUT
OSC OUTPUT
APC FILTER
BURST INPUT
GND
14 A ALT PULSE
13 B KILLER
14 B B.G.P
13 A PHASE CONTROL
11 A PAL S/D
20A +12V
19A +15V
16B SSP
19B -15V
21A -12V
BJ A14
D-1
BB A14
B2 A14
B3 A14
BC A14
BA A17
BG A3
BJ A7
BB B13
B2 B13
B3 B13
BC B13
BJ A12
BB B14
B2 B14
B3 B14
BC B14
HB-4
BB A13
B2 A13
B3 A13
BC A13
HB-2
BB A11
B2 A11
B3 A11
BC A11
BG B13
HB-1
BB B16
B2 B16
B3 B16
BC B16
BD (PAL DECODER Y.TRAP) or BM (PAL-M DECODER Y.TRAP)

BD board (PAL DECODER Y. TRAP) 1-619-138-15 (BVM-1415P ONLY)
BM board (PAL-M DECODER Y. TRAP) 1-619-138-24 (BVM-1415PM ONLY)

IC	5 4 3 7 8 1 2 6
Q	101 33 25 32 102 31 104 34 103 30 24 23 35 22 21 29 4 20 28 18 26 3 14 16 2 13 15 1 5 36,17 38 9 8 7 6 10 11 12
D	15 11 12 5 13 201 4 202 2 1 6 10
ADJ · TP	RV7 TP5 TP10 TP8 RV6 TP7 TP6 TP9 RV5 TP3 TP2 RV9 RV10 TP1 RV1 CV1 RV4 TP13 TP14 RV3 TP11 TP12 CV2 RV2 RV8

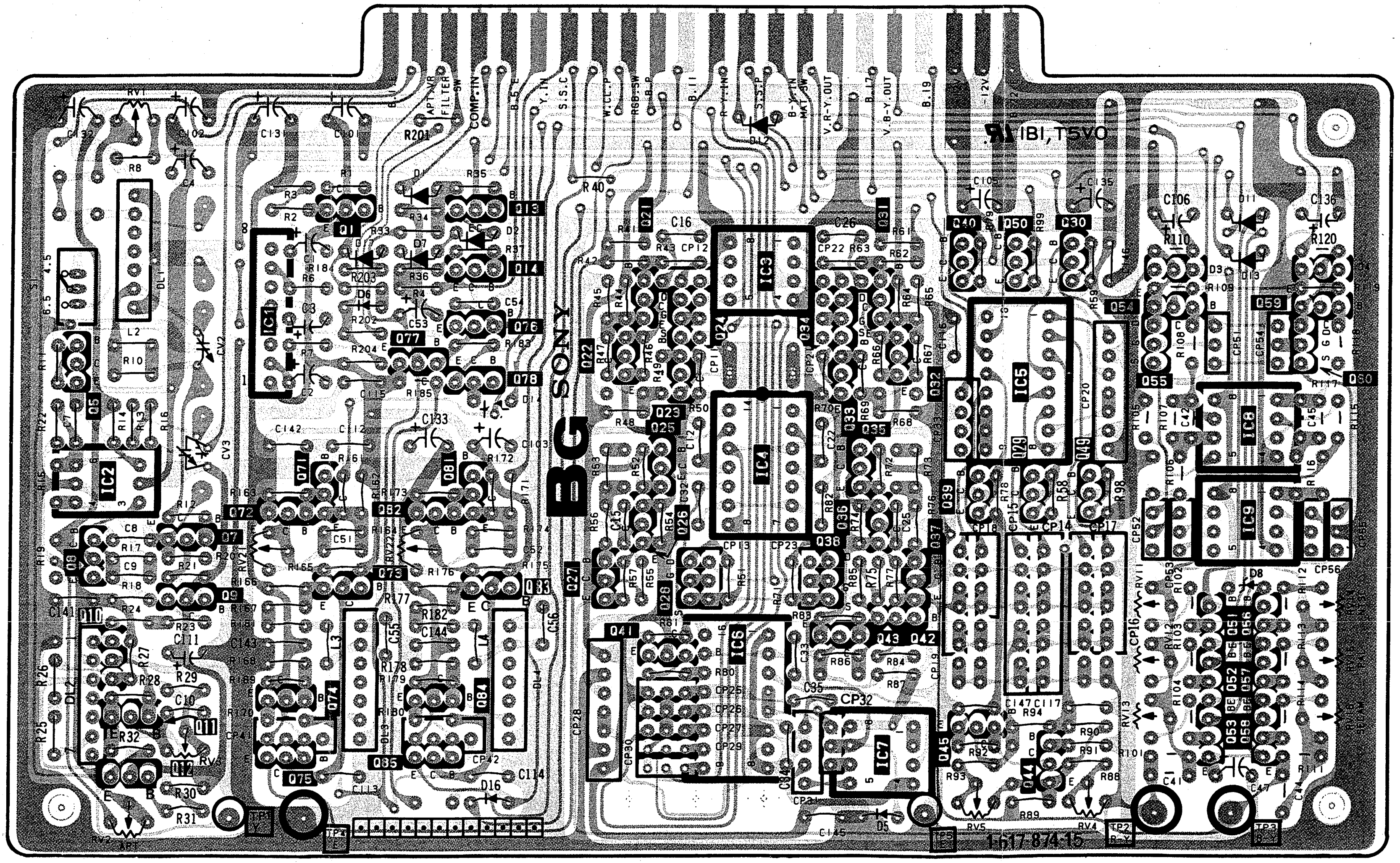

1-619-138-15/24
SONY BD/BM
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
RV1
RV2
RV3
RV4
RV5
RV6
RV7
RV8
RV9
RV10
CV1
CV2
X1
L1
L2
L3
TP1
TP5
TP6
TP7
TP8
TP9
TP12
TP13
TP14
Q34
Q35
Q38
Q101
Q102
Q103
Q104
B-Y.IHD
R-Y.IHD
GND
B-Y OUT
R-Y OUT
KILLER
COMB SW
VIDEO IN
+12V
-12V
+15V
SSP
BGP

IC1	TA7193P	PAL DEMODULATOR
2	LA7016	RESIDUAL SWITCH
3	TL8608P	1H DELAY LINE
4	TL8608P	1H DELAY LINE
5	TC4053BP	ANALOG SWITCHER
6	LA7016	BURST GATE
7	uPC4558C	R-Y CLAMP
8	uPC4558C	B-Y CLAMP
Q1	2SC403SP	BUFFER
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECTER
4	2SC3068	BUFFER
5	2SC3068	BUFFER
6	2SA844	PHASE CONTROLLER
7	2SC2668	PHASE CONTROLLER
8	2SA844	PHASE CONT. AMP.
9	2SC2668	PHASE CONT. AMP.
10	2SA844	APL FILTER
11	2SA844	APL FILTER
12	2SC2668	APL FILTER SWITCH
13	2SC403SP	R-Y L.P.F
14	2SC403SP	R-Y L.P.F
15	2SC403SP	B-Y L.P.F
16	2SC403SP	B-Y L.P.F
17	2SC2668	AMPLIFIER
18	2SK381	R-Y CLAMP
20	2SA844	BUFFER
21	2SC2668	BUFFER
22	2SC403SP	CCD OUT L.P.F
23	2SA844	CCD OUT L.P.F
24	2SC2668	BUFFER
25	2SC3068	BUFFER
26	2SK381	B-Y CLAMP
28	2SA844	BUFFER
29	2SC2668	BUFFER
30	2SC403SP	CCD OUT L.P.F
31	2SA844	CCD OUT L.P.F
32	2SC2668	BUFFER
33	2SC3068	BUFFER
34	2SC2668	CCD CLOCK GEN
35	2SC2668	CCD CLOCK GEN
36	2SC2668	BUFFER
38	2SC2668	BUFFER
101	2SB734	SYSTEM SWITCH
102	2SD774	SYSTEM SWITCH
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1SS119	COMB. SWITCH
4	RD3.0EN2	CCD BIAS
5	RD9.1EB	SWITCH BIAS
6	1SS119	KILLER SWITCH
10	1T25	PHASE CONTROL
11	1SS119	PAL S/D SWITCH
12	RD12EB2	PHASE SWITCH
13	RD12EB2	SYSTEM SWITCH
16	1SS119	COMB SW
201	1SS119	PROTECTOR
202	1SS119	PROTECTOR

● ▨ : Conductor side pattern
● ░ : Component side pattern

BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL, Y DELAY, VECTOR OUT, NTSC MATRIX SW, G-Y MATRIX AMP)

IC	1, 6, 3, 4, 7, 5
Q	5, 8, 10, 11, 12, 7, 9, 72, 74, 75, 71, 73, 1, 77, 82, 84, 85, 13, 14, 76, 81, 83, 27, 22, 21, 26, 25, 23, 41, 24, 28, 38, 43, 34, 33, 35, 31, 36, 42, 32, 37, 40, 45, 39, 50, 29, 44, 30, 49
D	17, 6, 1, 7, 15, 2, 16, 12, 5, 3, 11, 13, 4
TP ADJ	RV1, RV2, CV2, CV3, RV3, TP1, RV21, TP4, RV22, TP5, RV5, RV4, RV11, RV12, RV13, TP2, TP3, RV14, RV15, RV16

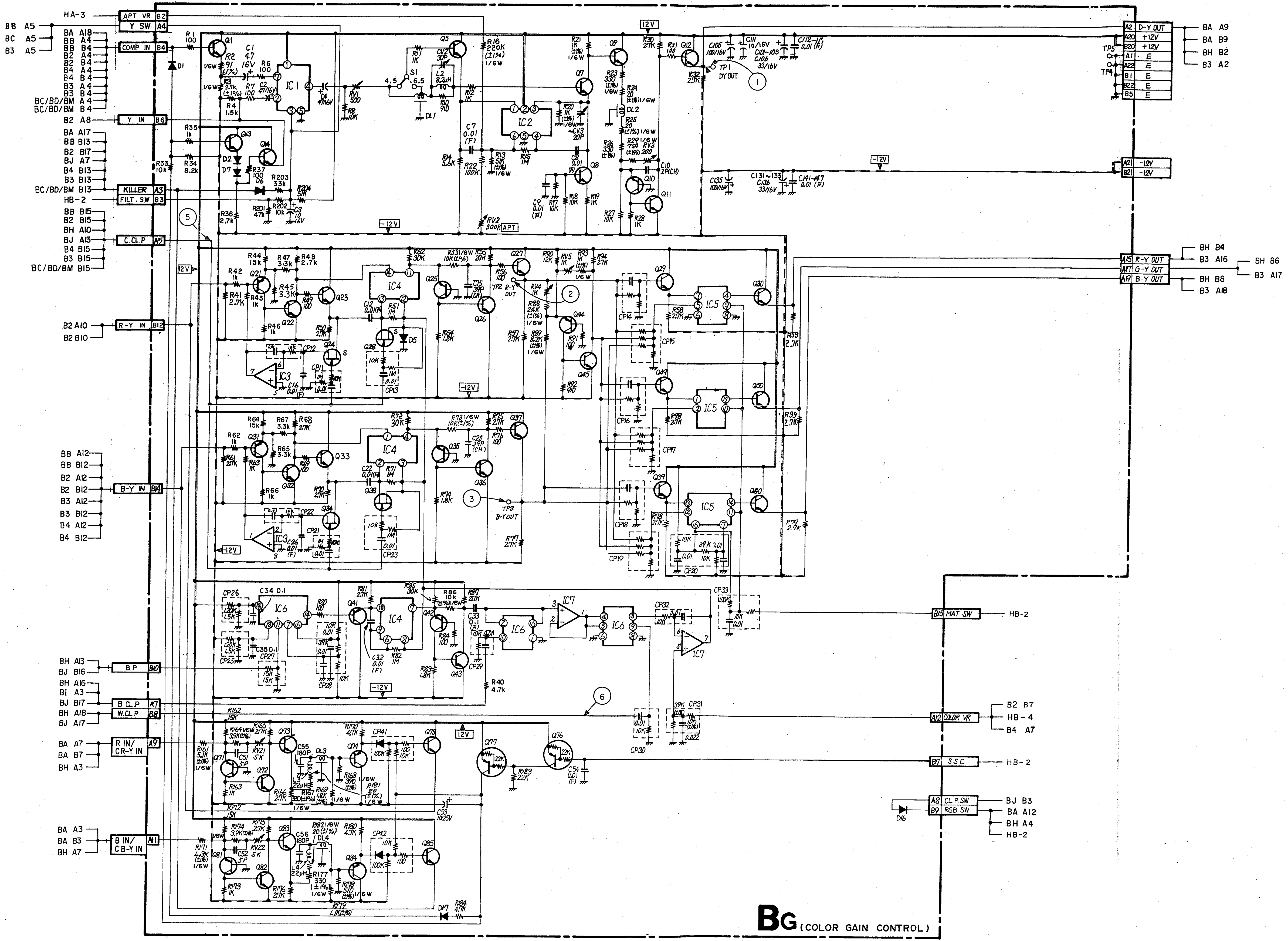


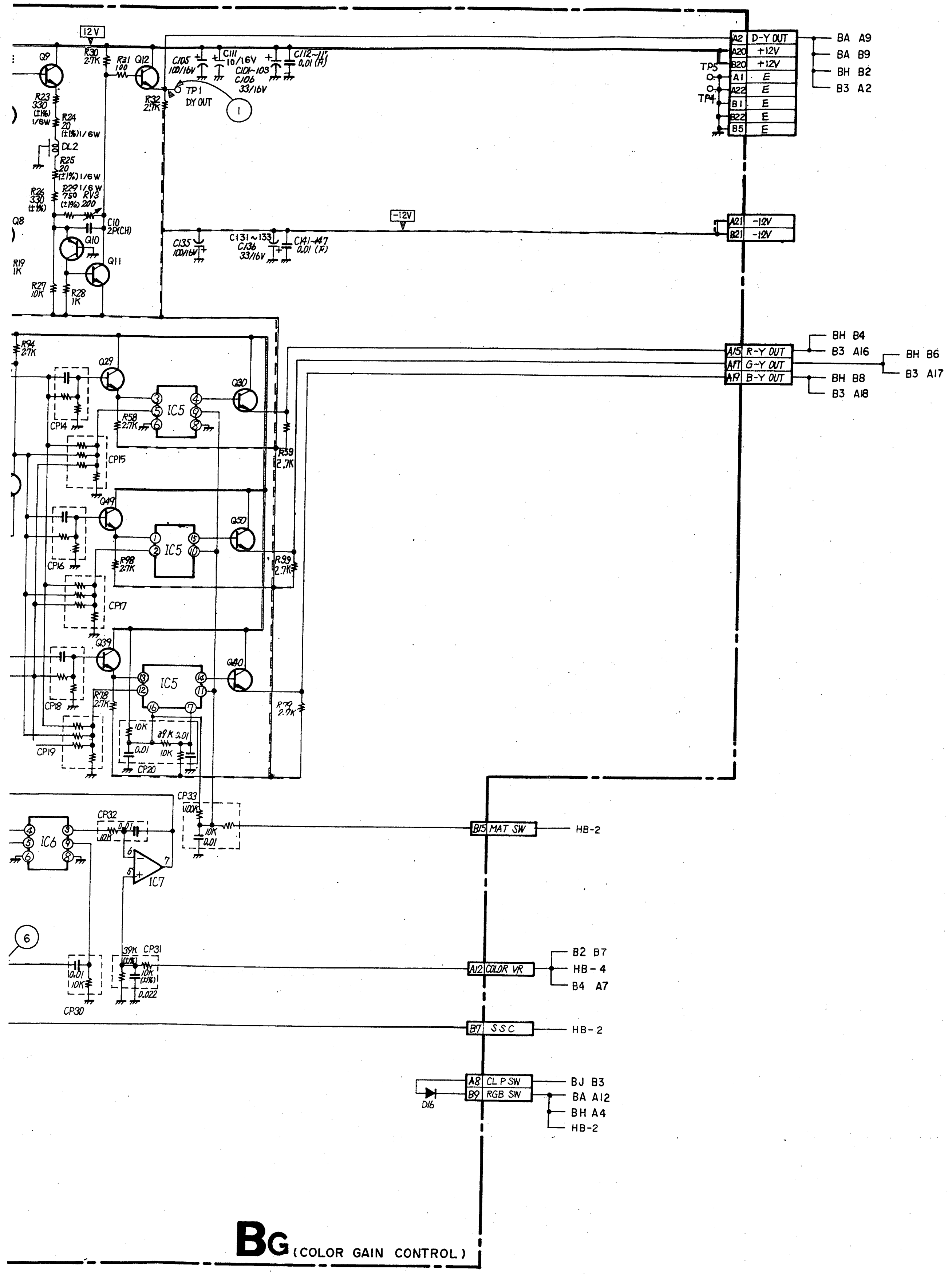
COMP.IN
APT.IN
FILTER SW
Y.IN
S.S.C
V.B-Y.OUT
V.R-Y.OUT
B.I.
B.19
12V
SONY
BG
IBI,T5V0
1-617-874-15
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
RV1
RV2
RV3
RV4
RV5
RV11
RV12
RV13
CV2
CV3
TP1
TP2
TP3
TP4
TP5

● ▩: Conductor side pattern

● ░: Component side pattern

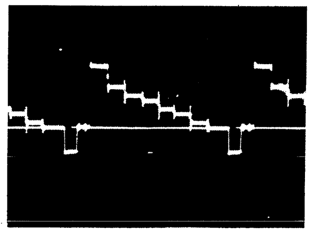
BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL, Y DELAY, NTSC MATRIX SW, G-Y MATRIX AMP)


HA-3
APT VR B2
Y SW A4
COMP IN B4
Y IN B6
KILLER A3
FILT. SW B3
C.CL.P A5
R-Y IN B12
B-Y IN B14
B.P B10
B.CL.P A7
W.CL.P B8
R IN/ CR-Y IN A9
B IN/ CB-Y IN A11
D-Y OUT
+12V
-12V
E
R-Y OUT
G-Y OUT
B-Y OUT
MAT SW
COLOR VR
SSC
CL.P SW
RGB SW
HB-2
HB-4
IC1
IC2
IC3
IC4
IC5
IC6
IC7
TP1 DY OUT
TP2 R-Y OUT
TP3 B-Y OUT
TP4
TP5
RV1 500
RV2 500K APT
RV3 200
RV21 5K
RV22 5K
DL1
DL2
DL3
DL4
Bg (COLOR GAIN CONTROL)

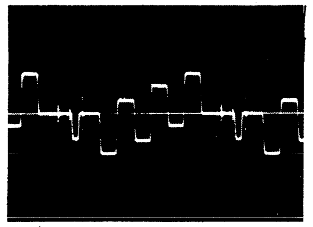

12V
Q9
R30 2.7K
R31 100
Q12
C105 100/16V
C111 10/16V
C101~103
C106 33/16V
C112~117 0.01 (F)
TP1
DY OUT
①
R32 2.7K
R23 330 (±1%) 1/6W
R24 20 (±1%) 1/6W
DL2
R25 20 (±1%) 1/6W
R26 330 (±1%)
R29 1/6W 750 (±1%)
RV3 200
Q8
C10 2P(CH)
Q10
Q11
R19 1K
R27 10K
R28 1K
TP5
TP4
A2 D-Y OUT
A20 +12V
B20 +12V
A1 E
A22 E
B1 E
B22 E
B5 E
BA A9
BA B9
BH B2
B3 A2
-12V
C135 100/16V
C131~133
C136 33/16V
C141~147 0.01 (F)
A21 -12V
B21 -12V
R94 2.7K
Q29
Q30
IC5
R58 2.7K
CP14
CP15
R59 2.7K
A15 R-Y OUT
A11 G-Y OUT
A19 B-Y OUT
BH B4
B3 A16
BH B6
B3 A17
BH B8
B3 A18
Q49
Q50
R98 2.7K
R99 2.7K
CP16
CP17
Q39
Q40
R78 2.7K
R79 2.7K
CP18
CP19
CP20
10K
39K
0.01
CP33
CP32
IC6
IC7
B15 MAT SW
HB-2
⑥
CP30
CP31
39K
0.01
10K
0.022
A12 COLOR VR
B2 B7
HB-4
B4 A7
B7 SSC
HB-2
D16
A8 CL P SW
B9 RGB SW
BJ B3
BA A12
BH A4
HB-2
BG (COLOR GAIN CONTROL)

BG BOARD

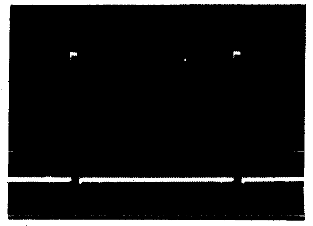
IC1	LA7016	FILTER SW
2	TX-429M	APERTURE
3	NJM4558D	COLOR DIFFERENCE CLAMP
4	CX-718D	CHROMA CONTROL
5	uPD4053BC	MATRIX SW
6	uPD4053BC	CHROMA CONTROL
7	TL082CP	CHROMA CONTROL
Q1	2SC403SP	BUFF
5	2SC403SP	APERTURE
7	2SC403SP	APERTURE
8	2SC403SP	APERTURE
9	2SC403SP	Y DELAY
10	2SA844	Y AMP
11	2SC403SP	Y AMP
12	2SC403SP	Y AMP
13	2SC403SP	BUFF
14	2SC3068	BUFF
21	2SA844	R-Y AMP
22	2SC403SP	R-Y AMP
23	2SC403SP	R-Y CLAMP
24	2SK381	R-Y CLAMP
25	2SA844	R-Y CHROMA CONTROL
26	2SC403SP	R-Y CHROMA CONTROL
27	2SC403SP	R-Y CHROMA CONTROL
28	2SK381	R-Y CHROMA CONTROL
29	2SC403SP	R-Y BUFF
30	2SC403SP	R-Y BUFF
31	2SA844	B-Y AMP
32	2SC403SP	B-Y AMP
33	2SC403SP	B-Y CLAMP
34	2SK381	B-Y CLAMP
35	2SA844	B-Y CHROMA CONTROL
36	2SC403SP	B-Y CHROMA CONTROL
37	2SC403SP	B-Y CHROMA CONTROL
38	2SK381	B-Y CHROMA CONTROL
39	2SC403SP	B-Y BUFF
40	2SC403SP	B-Y BUFF
41	2SA844	CHROMA CONTROL
42	2SA844	CHROMA CONTROL
43	2SC403SP	CHROMA CONTROL
Q44	2SA844	CHROMA CONTROL
45	2SC403SP	CHROMA CONTROL
49	2SC403SP	G-Y BUFF
50	2SC403SP	G-Y BUFF
71	2SA844	R-Y AMP
72	2SC403SP	R-Y AMP
73	2SC403SP	R-Y AMP
74	2SA844	R-Y DELAY
75	2SC3068	R-Y BUFF
76	DTA124ES	COMPONENT SW
77	DTA124ES	COMPONENT SW
81	2SA844	B-Y AMP
82	2SC403SP	B-Y AMP
83	2SC403SP	B-Y AMP
84	2SA844	B-Y DELAY
85	2SC3068	B-Y BUFF
D1	1SS119	COMPONENT SW
2	1SS119	DC SHIFT SW
5	1SS119	PROTECT
6	1SS119	DC SHIFT
7	1SS119	FILTER SW
16	1SS119	R.G.B. SW
17	1SS119	KILLER



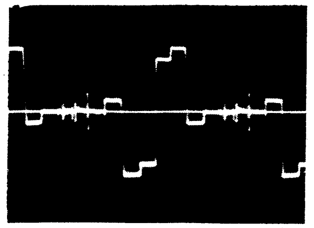
① 1.0Vp-p (H)



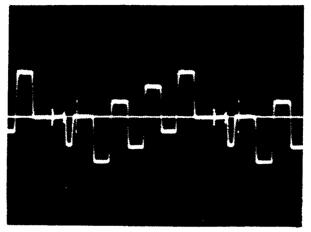
③ 1.7Vp-p (H)



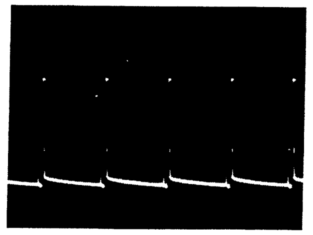
⑤ 4.8Vp-p (H)



② 1.4Vp-p (H)



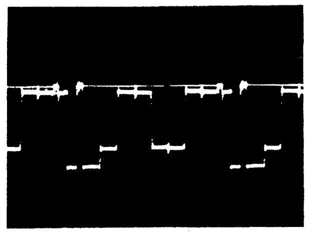
④ 0.9Vp-p (H)



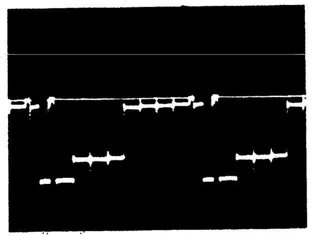
⑥ 12Vp-p (H)

BH BOARD

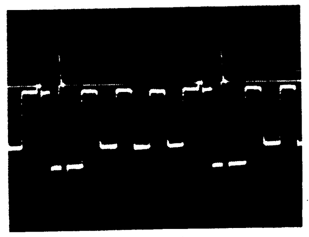
IC1(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP & CROSS HATCH SW
(3/3)		SCREENING SW
2(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
3(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
4(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)		SET UP SW
(3/3)		SCREENING SW
5	NJM4558S	SAMPLE HOLD
6	NJM4558S	SAMPLE HOLD
7	LA7016	BLUE ONLY SW
8	LA7016	BLUE ONLY SW
9	uPD4053BC	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
10(1/2)	uPD4053BC	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(2/2)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
11(1/4)	uPD4081BC	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(3/4)		
(2/4)		COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
(4/4)		Y SCREENING PULSE GEN
12	uPD4081BC	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
13	FPD4001BC	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
14	TC4030BP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
101	TX-429M	R CONTRAST CONTROL
102	TL082CP	R CONTRAST & BRIGHT CONTROL
201	TX-429M	G CONTRAST CONTROL
202	TL082CP	G CONTRAST & BRIGHT CONTROL
301	TX-429M	B CONTRAST CONTROL
302	TL082CP	B CONTRAST & BRIGHT CONTROL
Q1	2SC403SP	Y BUFF
2	2SK523	Y SAMPLE HOLD
3	2SA844	Y BUFF
4	2SC403SP	R-Y/R BUFF
Q5	2SK523	R-Y/Y SAMPLE HOLD
6	2SA844	R-Y/R BUFF
7	2SC403SP	G-Y/R BUFF
8	2SK523	G-Y/Y SAMPLE HOLD
9	2SA844	G-Y/G BUFF
10	2SC403SP	B-Y/B BUFF
11	2SK523	B-Y/B SAMPLE HOLD
12	2SA844	B-Y/B BUFF
13	2SA844	R BUFF
14	2SA844	G BUFF
15	2SA844	B BUFF
16	2SC3068	AGC PULSE BUFF
101	2SK381	R CONTRAST CONTROL
102	2SA844	R AMP
103	2SC403SP	R AMP
104	2SC403SP	R LIMITER
105	2SC403SP	R LIMITER
106	2SK381	R BRIGHT CONTROL
107	2SK381	R CONTRAST CONTROL
108	2SK381	R CONTRAST CONTROL
201	2SK381	G CONTRAST CONTROL
202	2SA844	G AMP
203	2SC403SP	G AMP
204	2SC403SP	G LIMITER
205	2SC403SP	G LIMITER
206	2SK381	G BRIGHT CONTROL
207	2SK381	G CONTRAST CONTROL
208	2SK381	G CONTRAST CONTROL
301	2SK381	B CONTRAST CONTROL
302	2SA844	B AMP
303	2SC403SP	B AMP
304	2SC403SP	B LIMITER
305	2SC403SP	B LIMITER
306	2SK381	B BRIGHT CONTROL
307	2SK381	B CONTRAST CONTROL
308	2SK381	B CONTRAST CONTROL
D1	1SS119	
101	1SS119	R LIMITER
102	1SS119	R PROTECT
201	1SS119	G LIMITER
202	1SS119	G PROTECT
301	1SS119	B LIMITER
302	1SS119	B PROTECT



① 0.7Vp-p (H)

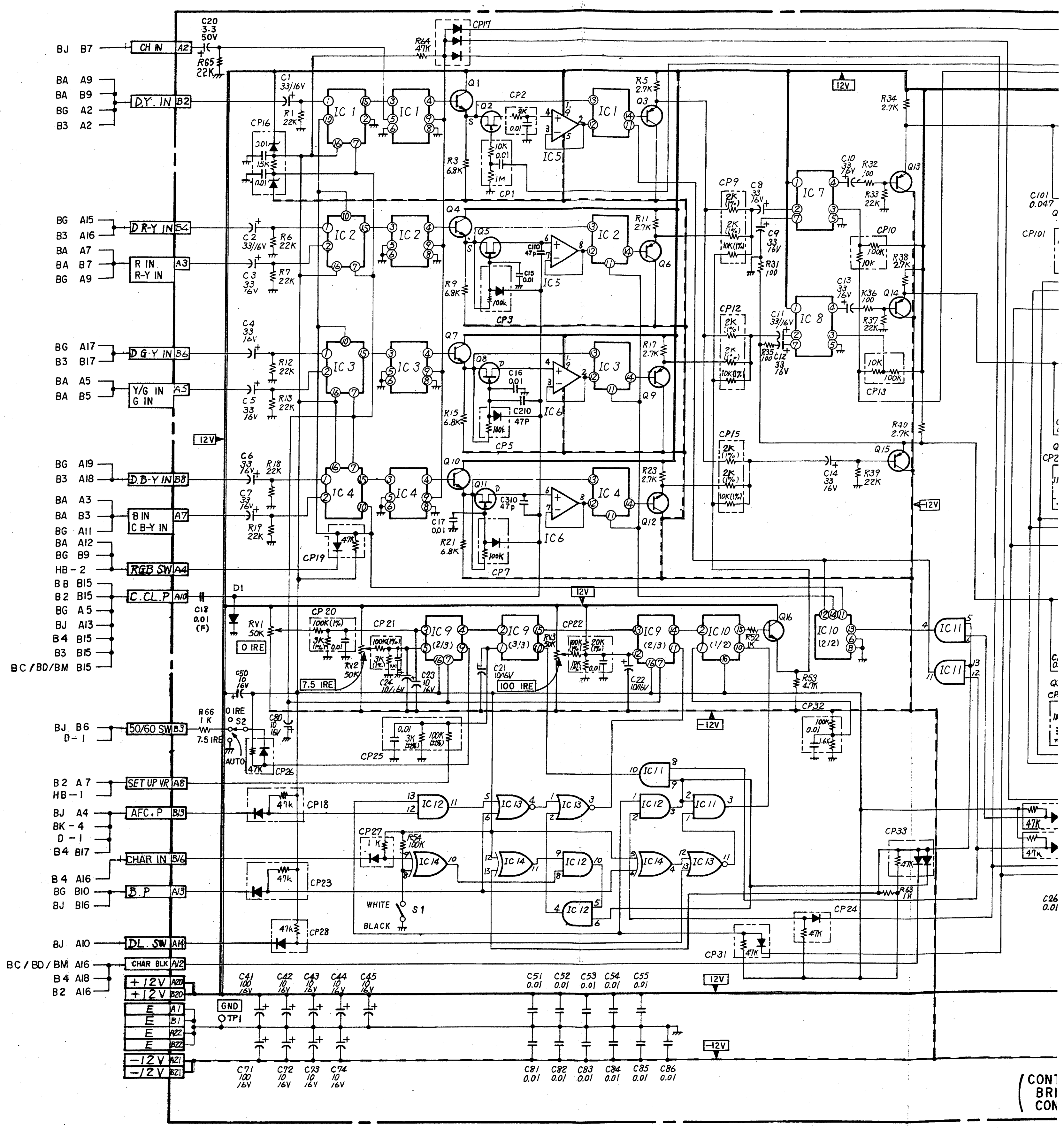


② 0.7Vp-p (H)

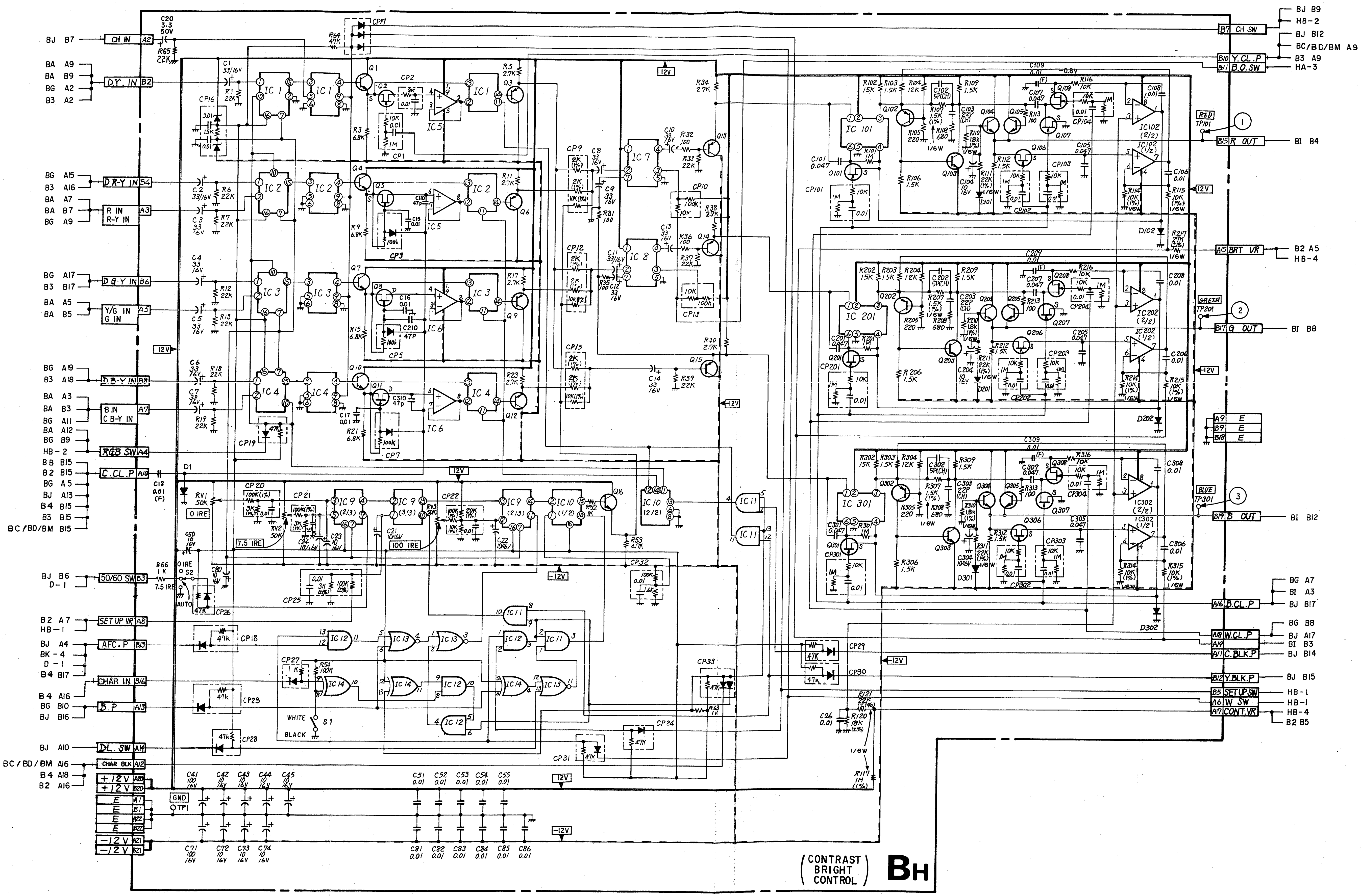


③ 0.7Vp-p (H)

BH board (Y/COLOR DIFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)

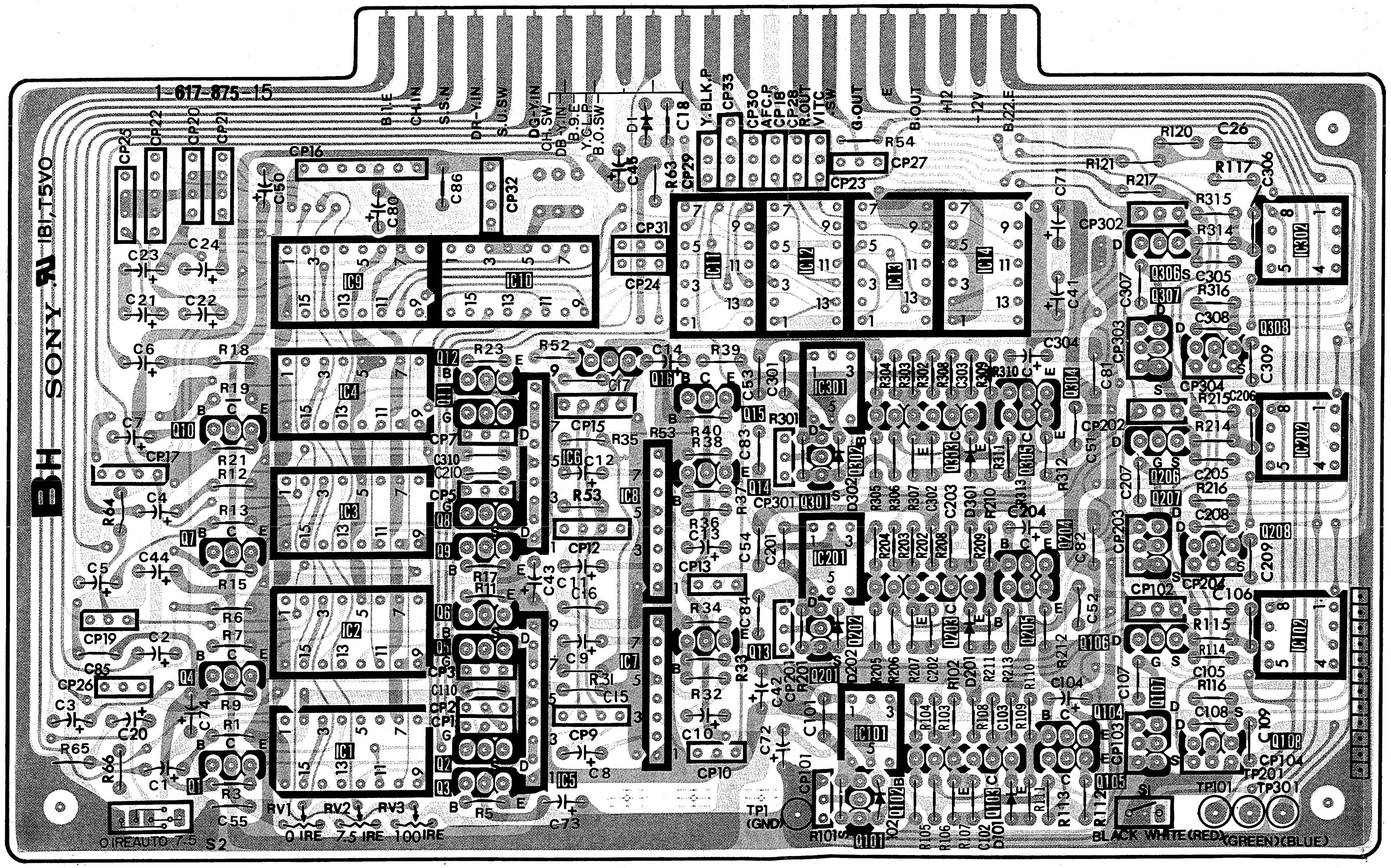

BJ B7
CH IN A2
BA A9
BA B9
BG A2
B3 A2
DY. IN B2
BG A15
B3 A16
D R-Y IN B4
BA A7
BA B7
BG A9
R IN R-Y IN A3
BG A17
B3 B17
D G-Y IN B6
BA A5
BA B5
Y/G IN G IN A5
BG A19
B3 A18
D.B-Y IN B8
BA A3
BA B3
B IN C B-Y IN A7
BG A11
BA A12
BG B9
HB-2
RGB SW A4
BB B15
B2 B15
C.CL.P A10
BG A5
BJ A13
B4 B15
B3 B15
BC/BD/BM B15
BJ B6
D-1
50/60 SW B3
B2 A7
HB-1
SET UP VR A8
BJ A4
BK-4
D-i
AFC.P B13
B4 B17
CHAR IN B16
B4 A16
BG B10
BJ B16
B.P A13
BJ A10
DL. SW A14
BC/BD/BM A16
CHAR BLK A12
B4 A18
B2 A16
+12V A20
+12V B20
E A1
E B1
E A22
E B22
-12V A21
-12V B21
GND
TP1
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
D1
RV1 50K
RV2 50K
0 IRE
7.5 IRE
100 IRE
S1
WHITE
BLACK
S2
AUTO
12V
-12V
CP1
CP2
CP3
CP5
CP7
CP9
CP10
CP12
CP13
CP15
CP16
CP17
CP18
CP19
CP20
CP21
CP22
CP23
CP24
CP25
CP26
CP27
CP28
CP31
CP32
CP33
C20 3.3 50V
R64 47K
R65 22K
C1 33/16V
R1 22K
R3 6.8K
R5 2.7K
R9 6.8K
R11 2.7K
R15 6.8K
R17 2.7K
R21 6.8K
R23 2.7K
R34 2.7K
R40 2.7K
R53 4.7K
R66 1K
C18 0.01 (F)
C41 100 16V
C42 10 16V
C43 10 16V
C44 10 16V
C45 10 16V
C51 0.01
C52 0.01
C53 0.01
C54 0.01
C55 0.01
C71 100 16V
C72 10 16V
C73 10 16V
C74 10 16V
C81 0.01
C82 0.01
C83 0.01
C84 0.01
C85 0.01
C86 0.01
C101 0.047
CP101
CONT
BRI
CON

BH board (Y/COLOR DIFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)


BJ B7
CH IN A2
BA A9
BA B9
BG A2
B3 A2
DY. IN B2
BG A15
B3 A16
BA A7
BA B7
BG A9
DR-Y IN B4
R IN R-Y IN A3
BG A17
B3 B17
BJ A5
BA B5
DG-Y IN B6
Y/G IN G IN A5
BG A19
B3 A18
BA A3
BA B3
BG A11
BA A12
BG B9
HB-2
BB B15
B2 B15
BG A5
BJ A13
B4 B15
B3 B15
BC/BD/BM B15
DB-Y IN B8
B IN CB-Y IN A7
RGB SW A4
C.CL.P A10
BJ B6
D-1
50/60 SW B3
B2 A7
HB-1
SET UP VR A8
BJ A4
BK-4
D-1
B4 B17
AFC.P B13
CHAR IN B16
B4 A16
BG B10
BJ B16
B.P A13
BJ A10
DL.SW A14
BC/BD/BM A16
CHAR BLK A12
B4 A18
B2 A16
+12V A20
+12V B20
E A1
E B1
E A22
E B22
-12V A21
-12V B21
GND
TP1
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC101
IC102
IC201
IC202
IC301
IC302
12V
-12V
0 IRE
7.5 IRE
100 IRE
WHITE
S1
BLACK
AUTO
S2
BJ B9
HB-2
BJ B12
BC/BD/BM A9
B3 A9
HA-3
B7 CH SW
B10 Y.CL.P
B11 B.O.SW
RED TP101
①
B15 R OUT
BI B4
B15 BRT VR
B2 A5
HB-4
GREEN TP201
②
B17 G OUT
BI B8
A9 E
B9 E
B8 E
BLUE TP301
③
B19 B OUT
BI B12
BG A7
BI A3
BJ B17
A16 B.CL.P
BG B8
BJ A17
BI B3
BJ B14
A18 W.CL.P
A19
A11 C.BLK.P
BJ B15
HB-1
HB-1
HB-4
B2 B5
B12 Y.BLK.P
B5 SET UP SW
A6 W SW
A17 CONT.VR
CONTRAST BRIGHT CONTROL
BH

BH board (Y/COLOR DIFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)

IC		9 4 3 2 1			10 6 5	8 7	11	12 301 201 101	13	14					202
Q	10 7 4 1			12 11 8 9 6 5 2 3		16	15 14 13	301 201 101	302 202 102	303 203 103	304 305 204 205	104 105	306 307 206 207 106 107	308 208 108	
D						1			302 202 102	301 201 101					
TP ADJ	RV1	RV2	RV3					TP1						TP101 TP201	TP301

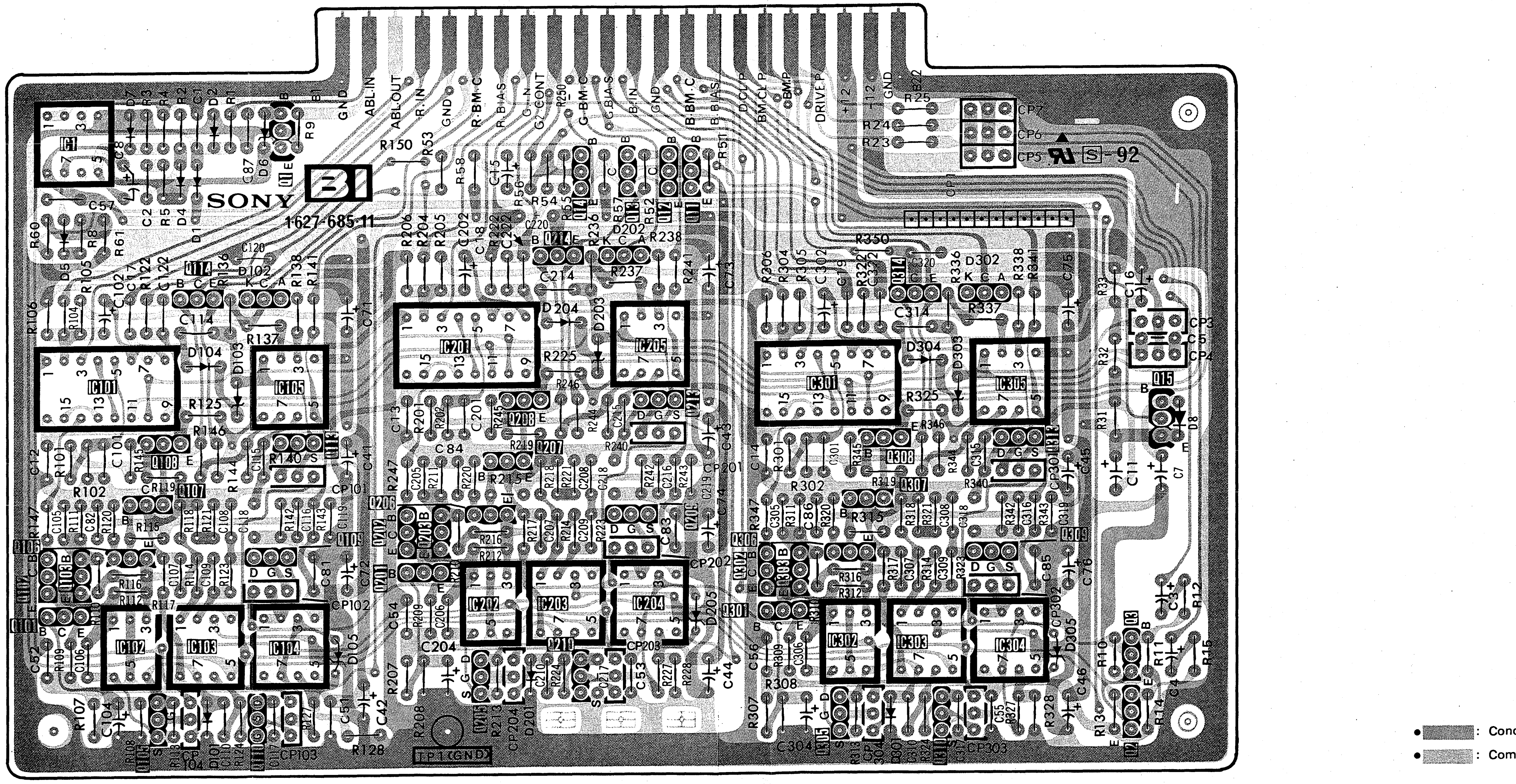

1-617-875-15
SONY
BH
B.I.E
C.IN
S.S.IN
DR-Y.IN
S.U.SW
DG-Y.IN
CH.SW
DB-Y.IN
B.9.E
Y.CLP
B.O.SW
Y.BLK.P
AFC.P
R.OUT
VITC SW
G.OUT
E
B.OUT
+12
-12V
B.22.E
0 IRE AUTO 7.5
S2
RV1
RV2
RV3
0 IRE
7.5 IRE
100 IRE
TP1 (GND)
S1
BLACK WHITE (RED) (GREEN) (BLUE)
TP101
TP201
TP301

● ▨ : Conductor side pattern

● ▨ : Component side pattern

BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)

IC	1 101 102 103 105 104 201 202 203 205 204 301 302 303 305 304
Q	102 101 103 106 105 108 107 114 110 1 113 109 202 201 203 206 205 208 214 207 210 14 13 12 11 213 209 302 301 303 306 305 308 307 314 310 313 309 3 2 15
D	5 7 4 1 104 101 2 103 102 6 105 201 204 203 202 205 301 304 303 302 305 8
TP	1

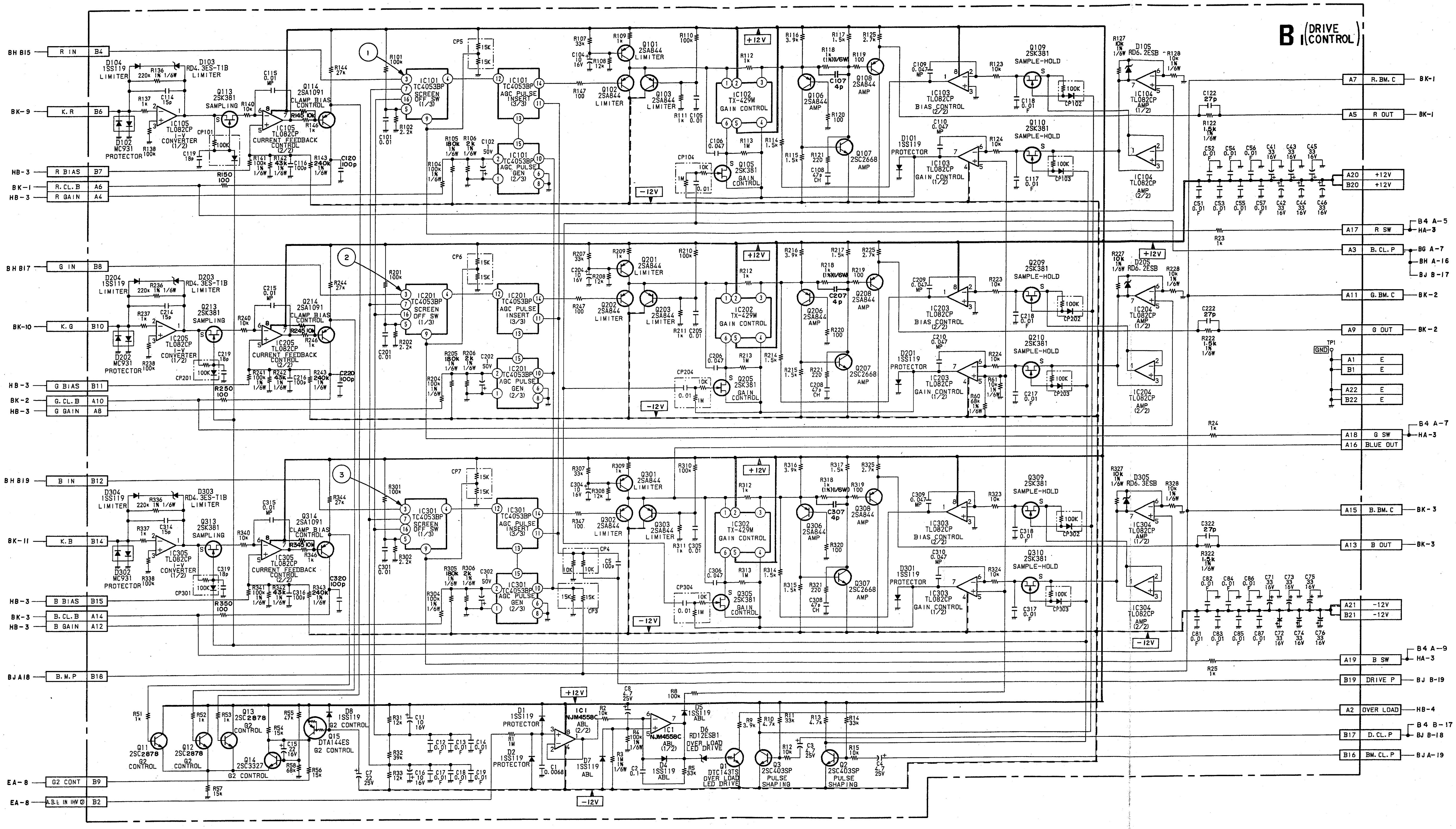


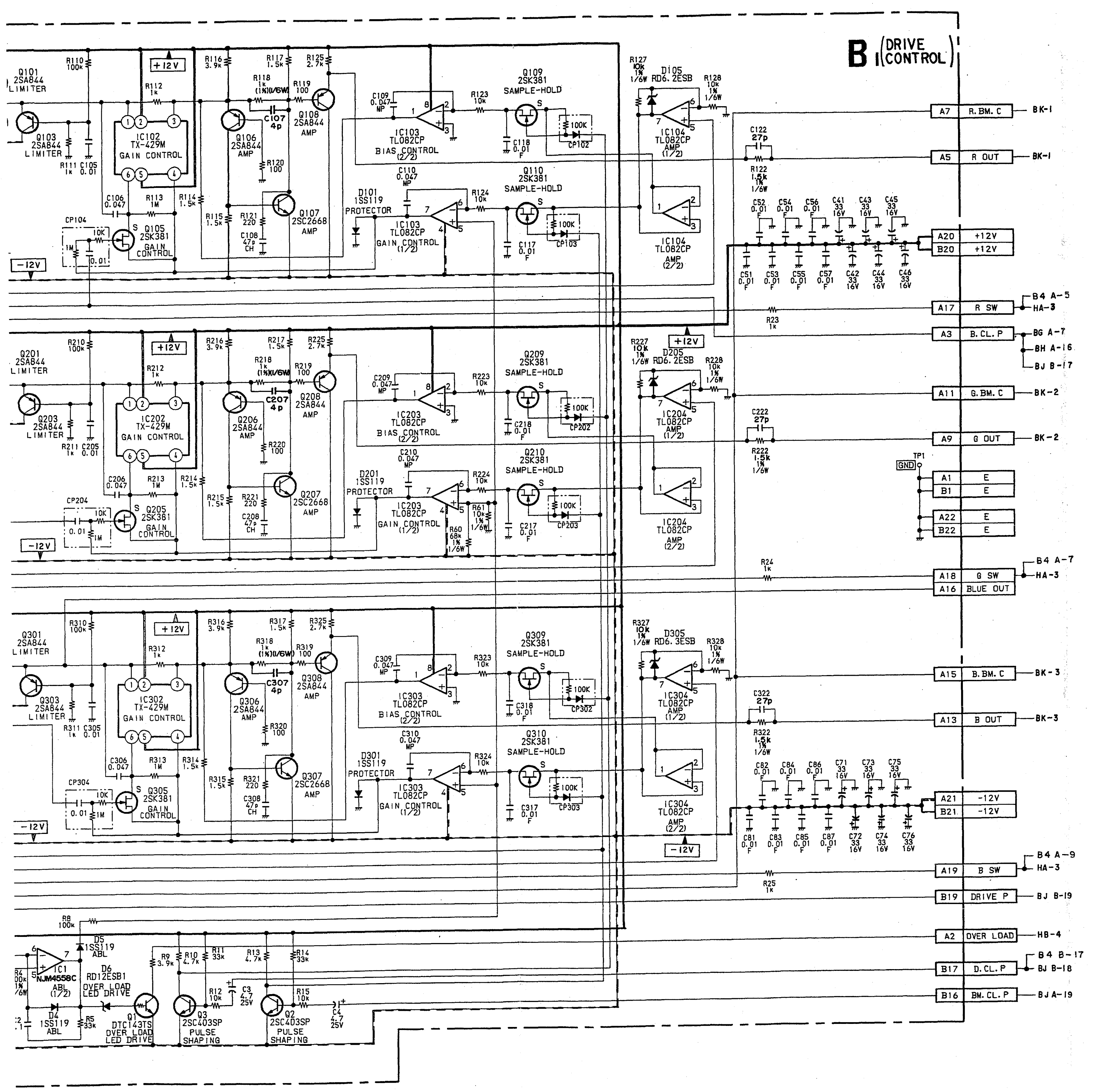
GND
ABL IN
ABL OUT
R IN
GND
R BM C
R BIAS
G IN
G2 CONT
G BM C
G BIAS
B IN
GND
B BM C
B BIAS
DCL P
BM CL P
BM P
DRIVE P
+12
-12
GND
SONY
BI
1-627-685-11
TP1 (GND)
IC1
IC101
IC102
IC103
IC104
IC105
IC201
IC202
IC203
IC204
IC205
IC301
IC302
IC303
IC304
IC305
CP3
CP4
CP5
CP6
CP7

● ▨ : Conductor side pattern

● ▨ : Component side pattern

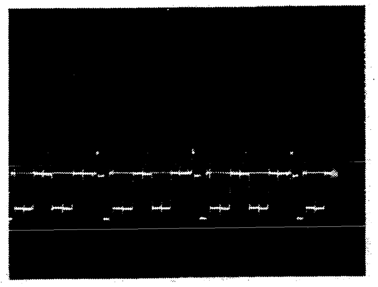
BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)

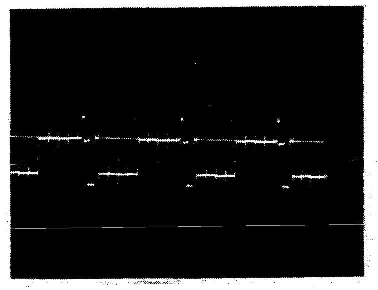

B I (DRIVE CONTROL)
BH BI5 R IN B4
BK-9 K.R B6
HB-3 R BIAS B7
BK-1 R.CL.B A6
HB-3 R GAIN A4
BH BI7 G IN B8
BK-10 K.G B10
HB-3 G BIAS B11
BK-2 G.CL.B A10
HB-3 G GAIN A8
BH BI9 B IN B12
BK-11 K.B B14
HB-3 B BIAS B15
BK-3 B.CL.B A14
HB-3 B GAIN A12
BJ A18 B.M.P B18
EA-8 G2 CONT B9
EA-8 A.B.L IN HV B2
A7 R.BM.C BK-1
A5 R OUT BK-1
A20 +12V
B20 +12V
A17 R SW B4 A-5 HA-3
A3 B.CL.P BG A-7 BH A-16 BJ B-17
A11 G.BM.C BK-2
A9 G OUT BK-2
A1 E
B1 E
A22 E
B22 E
A18 G SW B4 A-7 HA-3
A16 BLUE OUT
A15 B.BM.C BK-3
A13 B OUT BK-3
A21 -12V
B21 -12V
A19 B SW B4 A-9 HA-3
B19 DRIVE P BJ B-19
A2 OVER LOAD HB-4
B17 D.CL.P B4 B-17 BJ B-18
B16 BM.CL.P BJ A-19
IC101 TC4053BP SCREEN OFF SW (1/3)
IC101 TC4053BP AGC PULSE INSERT (3/3)
IC101 TC4053BP AGC PULSE GEN (2/3)
IC102 TX-429M GAIN CONTROL
IC103 TL082CP BIAS CONTROL (2/2)
IC103 TL082CP GAIN CONTROL (1/2)
IC104 TL082CP AMP (1/2)
IC104 TL082CP AMP (2/2)
IC105 TL082CP I-V CONVERTER (1/2)
IC105 TL082CP CURRENT FEEDBACK CONTROL (2/2)
Q101 2SA844 LIMITER
Q102 2SA844 LIMITER
Q103 2SA844 LIMITER
Q105 2SK381 GAIN CONTROL
Q106 2SA844 AMP
Q107 2SC2668 AMP
Q108 2SA844 AMP
Q109 2SK381 SAMPLE-HOLD
Q110 2SK381 SAMPLE-HOLD
Q113 2SK381 SAMPLING
Q114 2SA1091 CLAMP BIAS CONTROL
D101 1SS119 PROTECTOR
D102 MC931 PROTECTOR
D103 RD4.3ES-T1B LIMITER
D104 1SS119 LIMITER
D105 RD6.2ESB
IC201 TC4053BP SCREEN OFF SW (1/3)
IC201 TC4053BP AGC PULSE INSERT (3/3)
IC201 TC4053BP AGC PULSE GEN (2/3)
IC202 TX-429M GAIN CONTROL
IC203 TL082CP BIAS CONTROL (2/2)
IC203 TL082CP GAIN CONTROL (1/2)
IC204 TL082CP AMP (1/2)
IC204 TL082CP AMP (2/2)
IC205 TL082CP I-V CONVERTER (1/2)
IC205 TL082CP CURRENT FEEDBACK CONTROL (2/2)
IC301 TC4053BP SCREEN OFF SW (1/3)
IC301 TC4053BP AGC PULSE INSERT (3/3)
IC301 TC4053BP AGC PULSE GEN (2/3)
IC302 TX-429M GAIN CONTROL
IC303 TL082CP BIAS CONTROL (2/2)
IC303 TL082CP GAIN CONTROL (1/2)
IC304 TL082CP AMP (1/2)
IC304 TL082CP AMP (2/2)
IC305 TL082CP I-V CONVERTER (1/2)
IC305 TL082CP CURRENT FEEDBACK CONTROL (2/2)
Q11 2SC2878 G2 CONTROL
Q12 2SC2878 G2 CONTROL
Q13 2SC2878 G2 CONTROL
Q14 2SC3327 G2 CONTROL
Q15 DTA144ES G2 CONTROL
D8 1SS119 G2 CONTROL
D1 1SS119 PROTECTOR
D2 1SS119 PROTECTOR
IC1 NJM4558C ABL (2/2)
IC1 NJM4558C ABL (1/2)
D4 1SS119 ABL
D5 1SS119 ABL
D6 RD12ESB1 OVER LOAD LED DRIVE
D7 1SS119 ABL
Q1 DTC143TS OVER LOAD LED DRIVE
Q3 2SC403SP PULSE SHAPING
Q2 2SC403SP PULSE SHAPING
+12V
-12V
TP1 GND

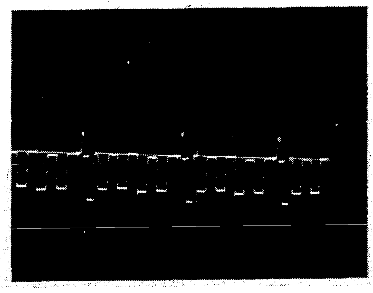

B (DRIVE CONTROL)
Q101 2SA844 LIMITER
Q103 2SA844 LIMITER
IC102 TX-429M GAIN CONTROL
Q105 2SK381 GAIN CONTROL
Q106 2SA844 AMP
Q107 2SC2668 AMP
Q108 2SA844 AMP
IC103 TL082CP BIAS CONTROL (2/2)
IC103 TL082CP GAIN CONTROL (1/2)
D101 1SS119 PROTECTOR
Q109 2SK381 SAMPLE-HOLD
Q110 2SK381 SAMPLE-HOLD
D105 RD6.2ESB
IC104 TL082CP AMP (1/2)
IC104 TL082CP AMP (2/2)
Q201 2SA844 LIMITER
Q203 2SA844 LIMITER
IC202 TX-429M GAIN CONTROL
Q205 2SK381 GAIN CONTROL
Q206 2SA844 AMP
Q207 2SC2668 AMP
Q208 2SA844 AMP
IC203 TL082CP BIAS CONTROL (2/2)
IC203 TL082CP GAIN CONTROL (1/2)
D201 1SS119 PROTECTOR
Q209 2SK381 SAMPLE-HOLD
Q210 2SK381 SAMPLE-HOLD
D205 RD6.2ESB
IC204 TL082CP AMP (1/2)
IC204 TL082CP AMP (2/2)
Q301 2SA844 LIMITER
Q303 2SA844 LIMITER
IC302 TX-429M GAIN CONTROL
Q305 2SK381 GAIN CONTROL
Q306 2SA844 AMP
Q307 2SC2668 AMP
Q308 2SA844 AMP
IC303 TL082CP BIAS CONTROL (2/2)
IC303 TL082CP GAIN CONTROL (1/2)
D301 1SS119 PROTECTOR
Q309 2SK381 SAMPLE-HOLD
Q310 2SK381 SAMPLE-HOLD
D305 RD6.3ESB
IC304 TL082CP AMP (1/2)
IC304 TL082CP AMP (2/2)
IC1 NJM4558C ABL (1/2)
D5 1SS119 ABL
D4 1SS119 ABL
D6 RD12ESB1 OVER LOAD LED DRIVE
Q1 DTC143TS OVER LOAD LED DRIVE
Q3 2SC403SP PULSE SHAPING
Q2 2SC403SP PULSE SHAPING
+12V
-12V
TP1 GND
A7 R.BM.C BK-1
A5 R OUT BK-1
A20 +12V
B20 +12V
A17 R SW B4 A-5 HA-3
A3 B.CL.P BG A-7 BH A-16 BJ B-17
A11 G.BM.C BK-2
A9 G OUT BK-2
A1 E
B1 E
A22 E
B22 E
A18 G SW B4 A-7 HA-3
A16 BLUE OUT
A15 B.BM.C BK-3
A13 B OUT BK-3
A21 -12V
B21 -12V
A19 B SW B4 A-9 HA-3
B19 DRIVE P BJ B-19
A2 OVER LOAD HB-4
B17 D.CL.P B4 B-17 BJ B-18
B16 BM.CL.P BJ A-19

BI BOARD

IC1	NJM4558D	ABL
101(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
102	TX-429M	GAIN CONTROL
103(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
104	TL082CP	AMP
105(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
201(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
202	TX-429M	GAIN CONTROL
203(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
204	TL082CP	AMP
205(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
301(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
302	TX-429M	GAIN CONTROL
303(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
304	TL082CP	AMP
305(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
Q1	DTC143TS	OVER LOAD LED DRIVE
2	2SC403SP	PULSE SHAPING
3	2SC403SP	PULSE SHAPING
11	2SC2878	G2 CONTROL
12	2SC2878	G2 CONTROL
13	2SC2878	G2 CONTROL
14	2SC2878	G2 CONTROL
15	DTA144ES	G2 CONTROL
101	2SA844	LIMITER
102	2SA844	LIMITER
103	2SA844	LIMITER
105	2SK381	GAIN CONTROL
106	2SA844	AMP
107	2SC2668	AMP
108	2SA844	AMP
109	2SK381	SAMPLE-HOLD
Q110	2SK381	SAMPLE-HOLD
113	2SK381	SAMPLING
114	2SA1091	CLAMP BIAS CONTROL
201	2SA844	LIMITER
202	2SA844	LIMITER
203	2SA844	LIMITER
205	2SK381	GAIN CONTROL
206	2SA844	AMP
207	2SC2668	AMP
208	2SA844	AMP
209	2SK381	SAMPLE-HOLD
210	2SK381	SAMPLE-HOLD
213	2SK381	SAMPLING
214	2SA1091	CLAMP BIAS CONTROL
301	2SA844	LIMITER
302	2SA844	LIMITER
303	2SA844	LIMITER
305	2SK381	GAIN CONTROL
306	2SA844	AMP
307	2SC2668	AMP
308	2SA844	AMP
309	2SK381	SAMPLE-HOLD
310	2SK381	SAMPLE-HOLD
313	2SK381	SAMPLING
314	2SA1091	CLAMP BIAS CONTROL
D1	1SS119	PROTECTOR
2	1SS119	PROTECTOR
4	1SS119	ABL
5	1SS119	ABL
6	RD12ESB2	OVER LOAD LED DRIVE
7	1SS119	ABL
8	1SS119	G2 CONTROL
101	1SS119	PROTECTOR
102	MC931	PROTECTOR
103	RD4.3ES-T1B	LIMITER
104	1SS119	LIMITER
201	1SS119	PROTECTOR
202	MC931	PROTECTOR
203	RD4.3ES-T1B	LIMITER
204	1SS119	LIMITER
301	1SS119	PROTECTOR
302	MC931	PROTECTOR
303	RD4.3ES-T1B	LIMITER
304	1SS119	LIMITER
105	RD6.2ESB	
205	RD6.2ESB	
305	RD6.3ESB	


①1.2 Vp-p(H)

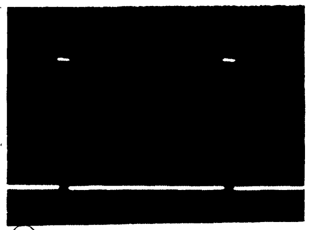

②1.2 Vp-p(H)


③1.2 Vp-p(H)

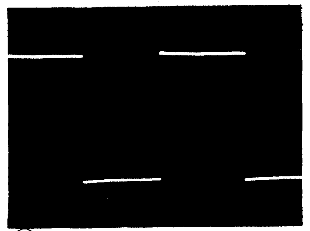
BJ BOARD

IC1	HD14538BP	PIC.SET.PULSE GEN
2	uPD4001BC	CROSS HATCH GEN
3	TC4040BP	V SYNC & DELAY
4	TC4040BP	V COUNT
5	TC504027BP	V SYNC & DELAY
6(1/2)	TC504027BP	CHROMA CLAMP PULSE GEN
(2/2)		2fH MULTI
7	TC504027BP	V COUNT
8	TC504027BP	1H PULSE PROCESS
9(1/2)	TC504027BP	V SYNC & DELAY
(2/2)		1H PULSE PROCESS
10(1/2)	HD14538BP	B.G.P GEN 2
(2/2)		H CYCLE
11(1/2)	HD14538BP	CROSS HATCH GEN
(2/2)		SPLIT Y BLK, C BLK PULSE GEN
12	HD14538BP	Y CYCLE AGC & CLAMP PULSE GEN
13(1/4)	uPD4001BC	CHROMA CLAMP PULSE GEN
(2/4)		Y.CL.P GEN
(3/4)		B.G.P GEN 2
(4/4)		RESIDUAL PULSE GEN
14(1/4)	uPD4001BC	SPLIT Y BLK: C BLK PULSE GEN
(3/4)		
(4/4)		
(2/4)		V CYCLY AGC & CLAMP PULSE GEN
15	uPD4071BP	V CYCLE AGC & CLAMP PULSE GEN
16(1/4)	HD14011BP	CROSS HATCH GEN
(2/4)		Y CYCLE AGC & CLAMP PULSE GEN
(3/4)		H OR V BLK, P
(4/4)		SPLIT Y BLK, C BLK PULSE GEN
17	HD14011BP	CROSS HATCH GEN
18	TC4023BP	CROSS HATCH GEN
19(1/4)	uPD4081BC	V COUNT
(2/4)		V SYNC & DELAY
(3/4)		2fH MULTI
(4/4)		1H PULSE PROCESS
20	uPD4081BC	V COUNT
21(1/4)	uPD4071BP	V CYCLE AGC & CLAMP PULSE GEN
(2/4)		V SYNC & DELAY
(3/4)		
(4/4)		V COUNT
22(1/4)	uPD4071BP	2fH MULTI
(2/4)		V COUNT
(3/4)		
(4/4)		V SYNC & DELAY

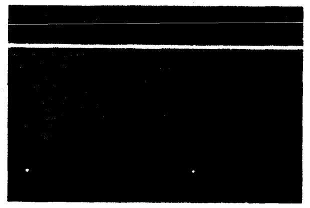
IC23(1/3)	TC4073BP	V SYNC & DELAY
(2/3)		
(3/3)		V COUNT
24(1/5)	uPD4069UBC	V SYNC & DELAY
(4/5)		
(2/5)		CROSS HATCH GEN
(3/5)		
(5/5)		V COUNT
25(1/6)	uPD4069UBC	1H PULSE PROCESS
(2/6)		INV
(3/6)		H OR V BLK.P
(4/6)		Y CYCLE AGC & CLAMP PULSE GEN
(5/6)		CROSS HATCH GEN
(6/6)		
26	TC40175BP	1H PULSE PROCESS
27(1/3)	uPD4053BC	CLAMP PULSE CHANGE SW
(2/3)		CROSS HATCH GEN
(3/3)		H OR V DL SW
28	TC4520BP	CROSS HATCH GEN
29(1/2)	HD14538BP	B.G.P GEN 1
(2/2)		Y.CL.P GEN
Q14	2SC2785	CROSS HATCH GEN
15	2SC2785	Y.CL.P GEN
16	2SC2785	Y.CL.P GEN
17	2SC2785	CHROMA CLAMP PULSE GEN
18	2SC2785	CHROMA CLAMP PULSE GEN
19	2SA1115	H CYCLE
20	2SC2785	H CYCLE
21	2SC2785	H CYCLE
22	2SC2785	H CYCLE
23	2SA1048	H CYCLE
24	2SC2785	H CYCLE
25	2SC2785	CHROMA CLAMP PULSE GEN
26	2SC2785	Y.CL.P GEN
D1	1SS119	CROSS HATCH GEN
2	1SS119	H CYCLE
3	1SS119	H CYCLE
7	1SS119	1H PULSE PROCESS
8	1SS119	V SYNC & DELAY
9	1SS119	2fH MULTI
11	MC931	PROT



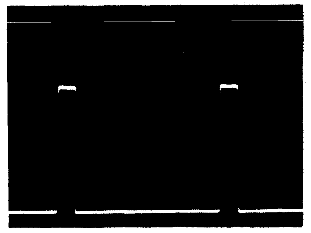
① 12Vp-p (H)
② 12Vp-p (H)



④ 12Vp-p (H)
⑤ 12Vp-p (H)

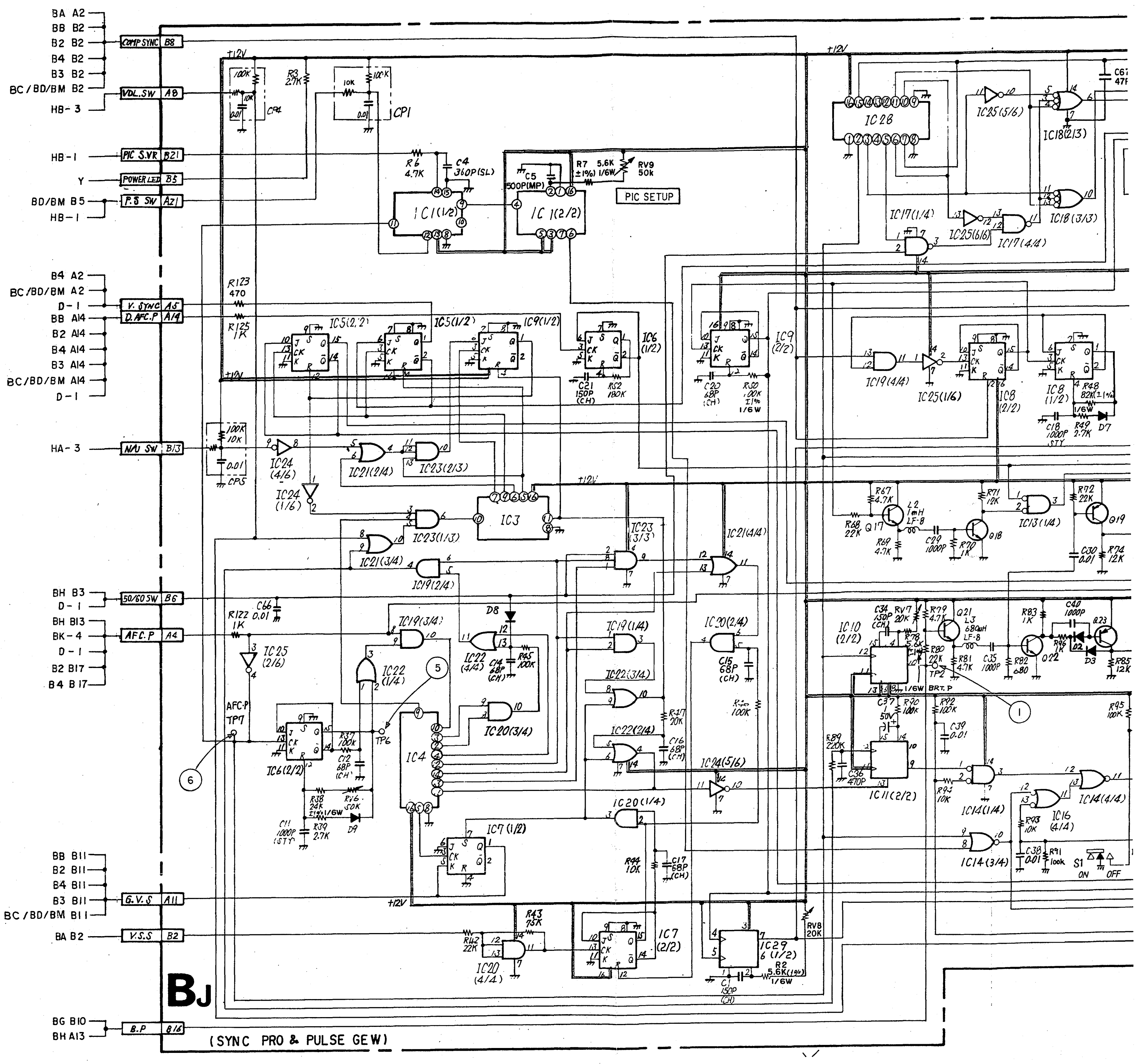


③ 12Vp-p (V)



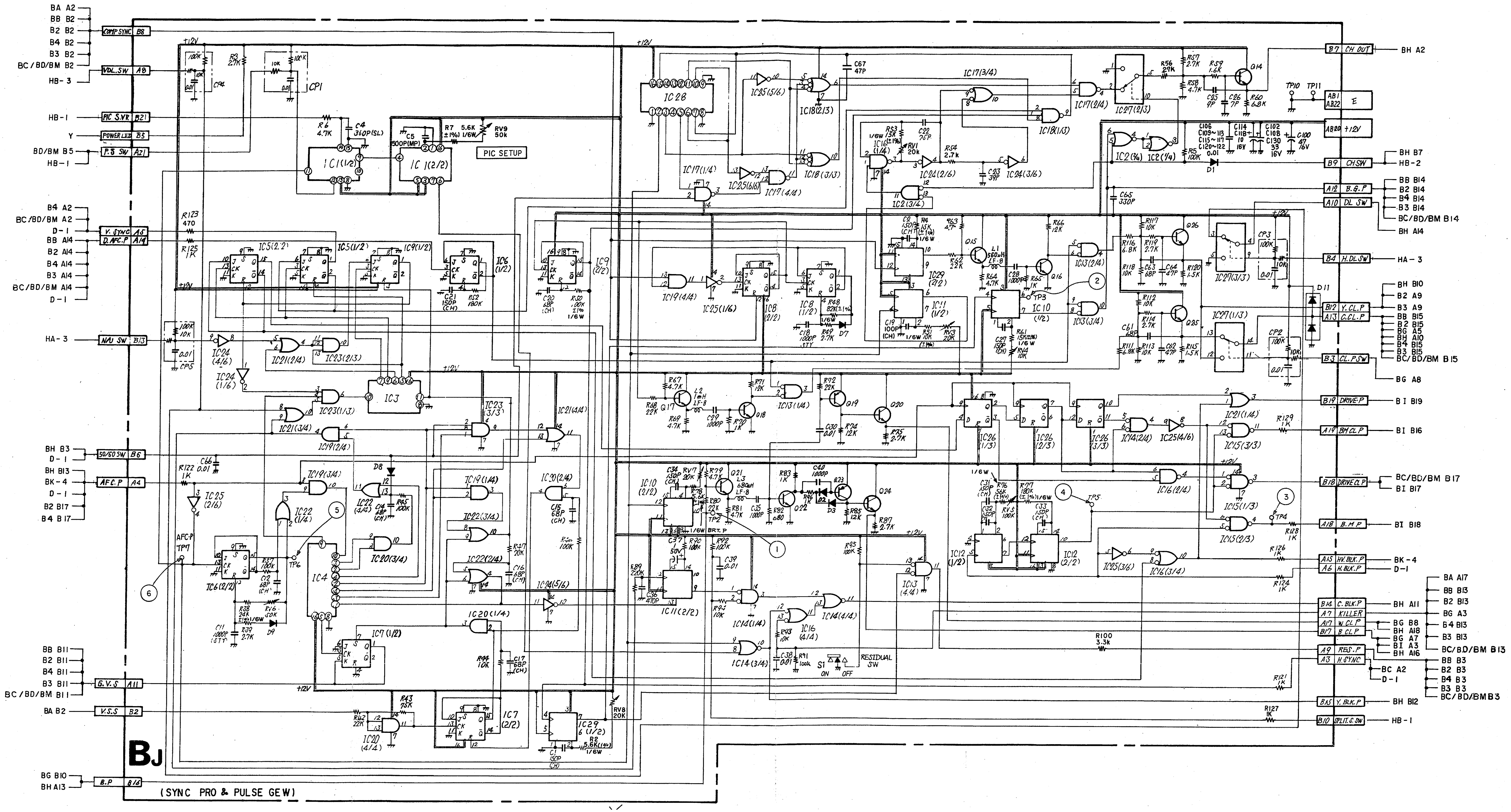
⑥ 12Vp-p (H)

BJ board (SYNC PROCESSING & PULSE GEN)


BA A2
BB B2
B2 B2
B4 B2
B3 B2
BC/BD/BM B2
HB-3
HB-I
Y
BD/BM B5
HB-I
B4 A2
BC/BD/BM A2
D-I
BB A14
B2 A14
B4 A14
B3 A14
BC/BD/BM A14
D-I
HA-3
BH B3
D-I
BH B13
BK-4
D-I
B2 B17
B4 B17
BB B11
B2 B11
B4 B11
B3 B11
BC/BD/BM B11
BA B2
BG B10
BH A13
COMP SYNC B8
VDL.SW A9
PIC S.VR B21
POWER LED B3
P.S SW A21
V.SYNC A5
D.AFC.P A14
NAU SW B13
50/60SW B6
AFC.P A4
G.V.S A11
V.S.S B2
B.P B14
PIC SETUP
IC1(1/2)
IC1(2/2)
IC3
IC4
IC5(1/2)
IC5(2/2)
IC6(1/2)
IC6(2/2)
IC7(1/2)
IC7(2/2)
IC8(1/2)
IC8(2/2)
IC9(1/2)
IC9(2/2)
IC10(2/2)
IC11(2/2)
IC13(1/4)
IC14(1/4)
IC14(3/4)
IC14(4/4)
IC16(4/4)
IC17(1/4)
IC17(4/4)
IC18(2/3)
IC18(3/3)
IC19(1/4)
IC19(2/4)
IC19(3/4)
IC19(4/4)
IC20(1/4)
IC20(2/4)
IC20(3/4)
IC20(4/4)
IC21(2/4)
IC21(3/4)
IC21(4/4)
IC22(1/4)
IC22(2/4)
IC22(3/4)
IC22(4/4)
IC23(1/3)
IC23(2/3)
IC23(3/3)
IC24(1/6)
IC24(4/6)
IC24(5/6)
IC25(1/6)
IC25(2/6)
IC25(5/6)
IC25(6/6)
IC28
IC29
RV7
RV8 20K
RV9 50k
AFC-P TP7
TP6
TP2
S1 ON OFF
+12V
BJ
(SYNC PRO & PULSE GEW)

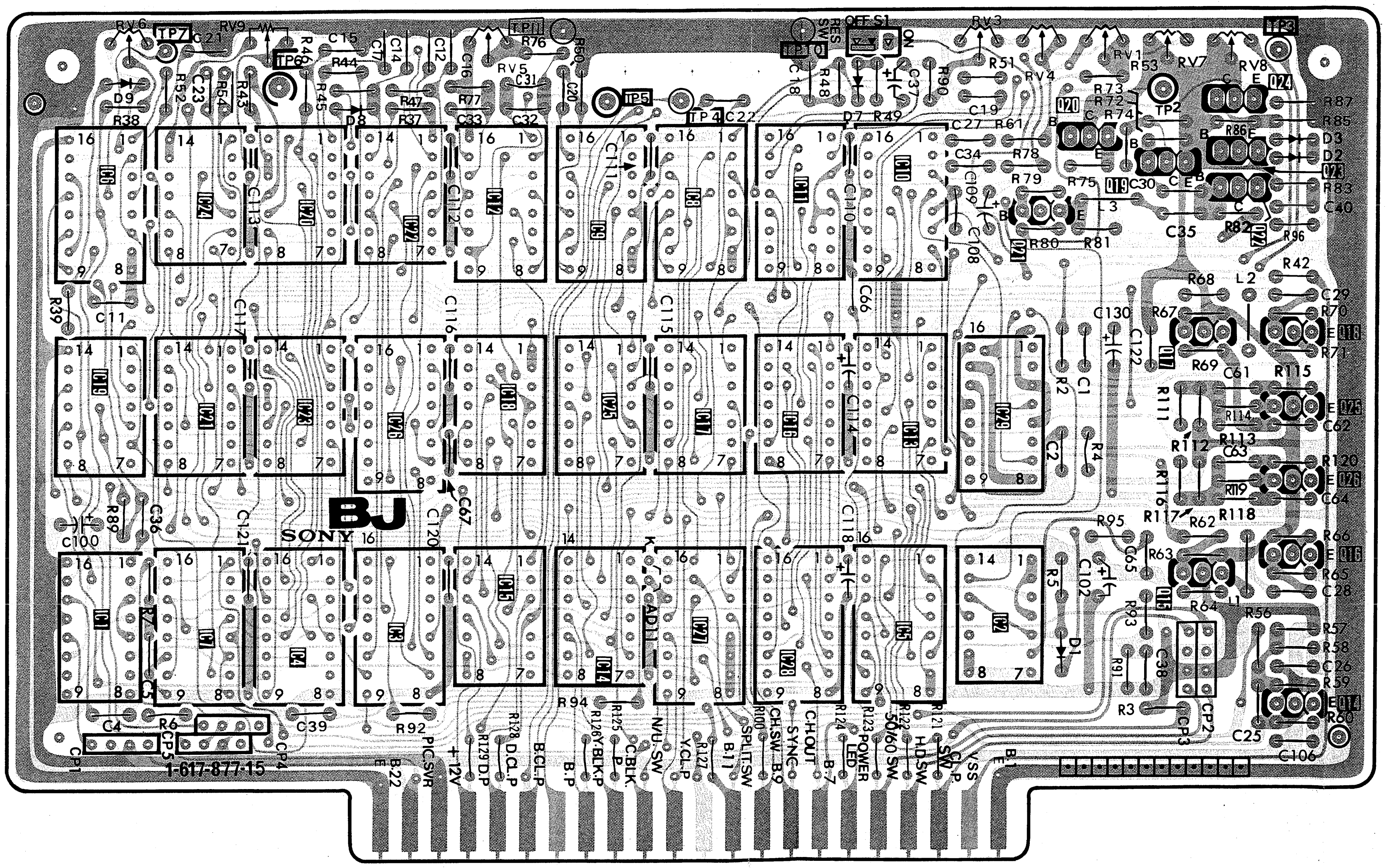
BJ board (SYNC PROCESSING & PULSE GEN)

EN


BA A2
BB B2
B2 B2
B4 B2
B3 B2
BC/BD/BM B2
HB-3
COMP SYNC B8
V.D.L.SW A8
HB-1
PIC S.V.R B21
Y
POWER LED B5
BD/BM B5
HB-1
P.S SW A21
PIC SETUP
B4 A2
BC/BD/BM A2
D-1
BB A14
B2 A14
B4 A14
B3 A14
BC/BD/BM A14
D-1
V. SYNC A5
D. AFC. P A14
HA-3
N/U SW B13
BH B3
D-1
50/60 SW B6
BH B13
BK-4
D-1
B2 B17
B4 B17
AFC.P A4
AFC.P TP7
BB B11
B2 B11
B4 B11
B3 B11
BC/BD/BM B11
G.V.S A11
BA B2
V.S.S B2
BJ
BG B10
BH A13
B.P B16
(SYNC PRO & PULSE GEW)
IC28
IC17(3/4)
IC27(2/3)
B7 CH OUT
BH A2
TP10 TP11
AB1 AB22 E
AB20 +12V
B9 CHSW
BH B7
HB-2
A12 B.G.P
A10 DL SW
BB B14
B2 B14
B4 B14
B3 B14
BC/BD/BM B14
BH A14
B4 H.DL.SW
HA-3
B12 Y.CL.P
A13 C.CL.P
B3 CL.P.SW
BH B10
B2 A9
B3 A9
BB B15
B2 B15
BG A5
BH A10
B4 B15
B3 B15
BC/BD/BM B15
BG A8
B19 DRIVE.P
BI B19
A19 BH.CL.P
BI B16
B18 DRIVE CL.P
BC/BD/BM B17
BI B17
A18 B.M.P
BI B18
A15 HV.BLK.P
A6 H.BLK.P
BK-4
D-1
B14 C.BLK.P
A7 KILLER
A17 W.CL.P
B17 B.CL.P
A9 RES.P
A3 H.SYNC
BH A11
BA A17
BB B13
B2 B13
BG A3
B4 B13
BG B8
BH A18
BG A7
BI A3
BH A16
B3 B13
BC/BD/BM B13
BC A2
D-1
BB B3
B2 B3
B4 B3
B3 B3
BC/BD/BM B3
B15 Y.BLK.P
BH B12
B10 SPLIT.C.SW
HB-1
RESIDUAL SW
S1 ON OFF
R100 3.3k

BJ board (SYNC PROCESSING & PULSE GEN)

IC	6 19 1	24 21 7	20 23 4	22 26 3	12 18 15	9 25 14	8 17 27	11 16 28	10 13 5	29 2						
Q											21	20	19	17 15	24 23 22	18 25 26 16 14
D	9			8			11		7		1					3 2
TP ADJ	RV6	TP7	RV9 TP6		RV5	TP11 TP5	TP4	TP10		RV3	RV4	RV1	RV7 TP2	RV8		TP 3

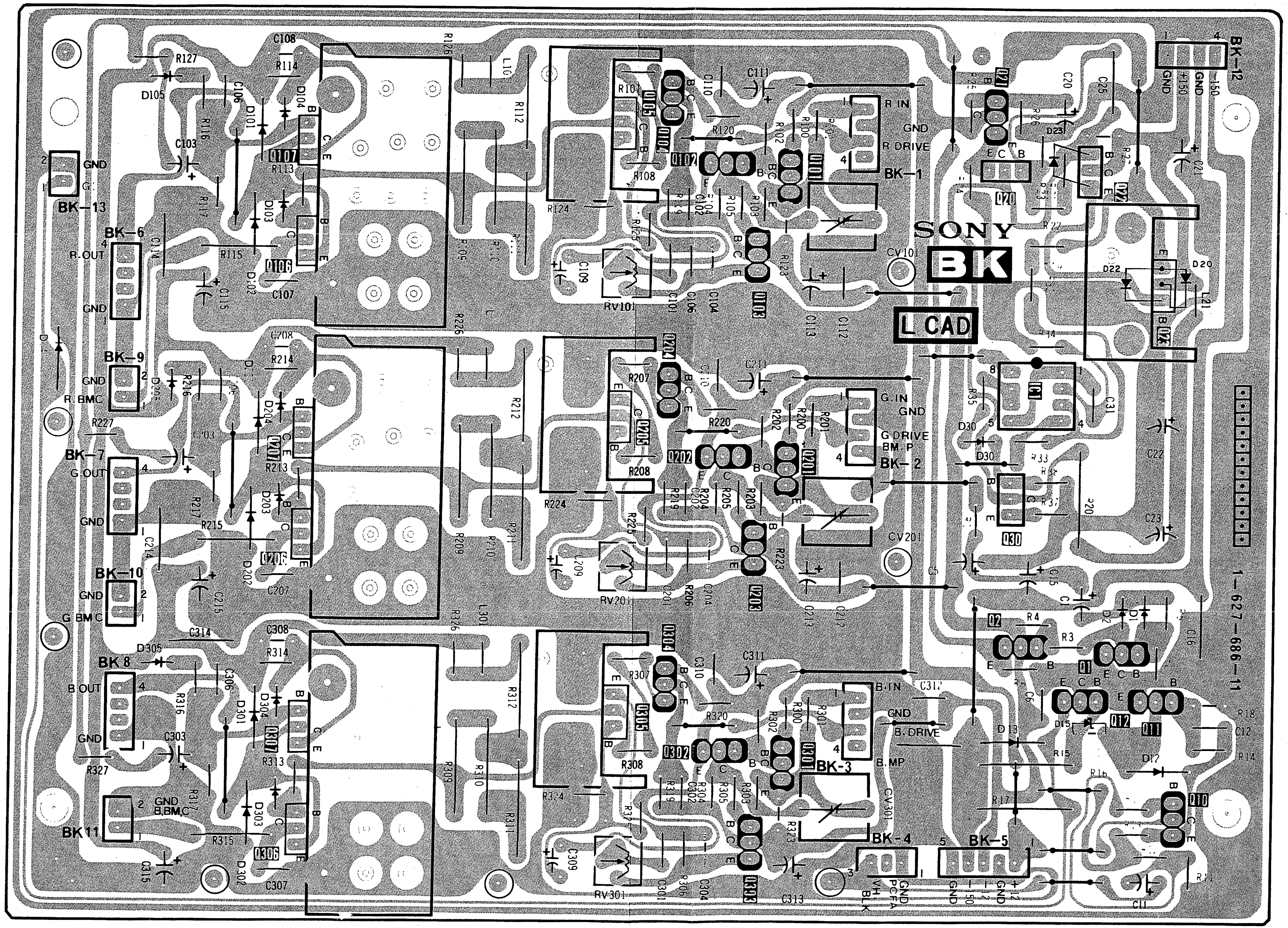

BJ
SONY
1-617-877-15
RV6
TP7
RV9
TP6
TP11
RV5
TP5
TP4
TP10
RES SW
OFF S1 ON
RV3
RV4
RV1
RV7
RV8
TP2
TP3
ADJ
+12V
B.22
PIC.SVR
D.P
D.CL.P
B.CL.P
B.P
Y.BLK.P
C.BLK
P
N/U SW
Y.CL.P
SPLIT.SW
B.11
CH.SW
B.9
SYNC
C.HOUT
B.7
POWER LED
50/60 SW
H.D.SW
SW.P
C.P
VSS
B.1
CP1
CP2
CP3
CP4
CP5

● ▨ : Conductor side pattern

● ░ : Component side pattern

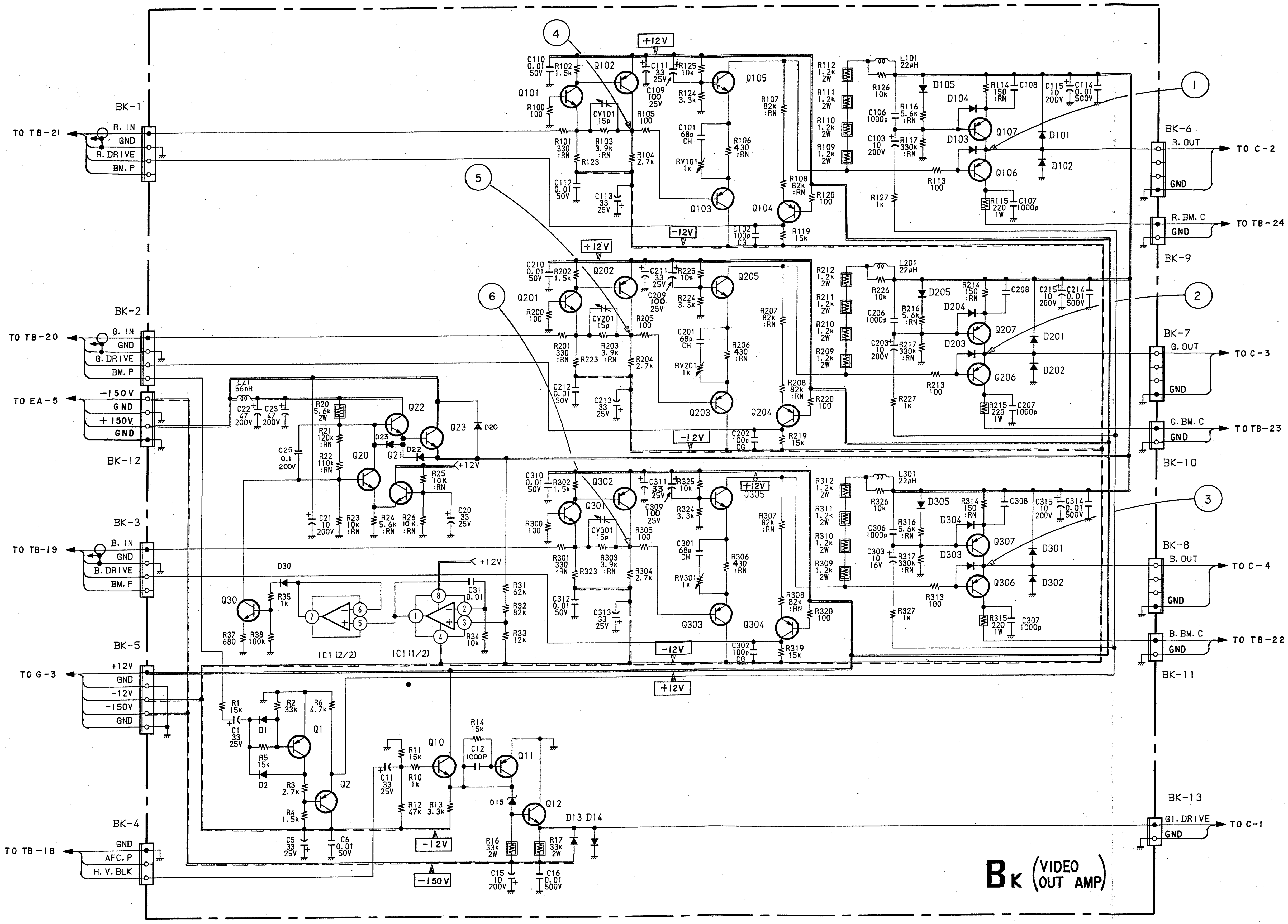
BK board (VIDEO OUT AMP)

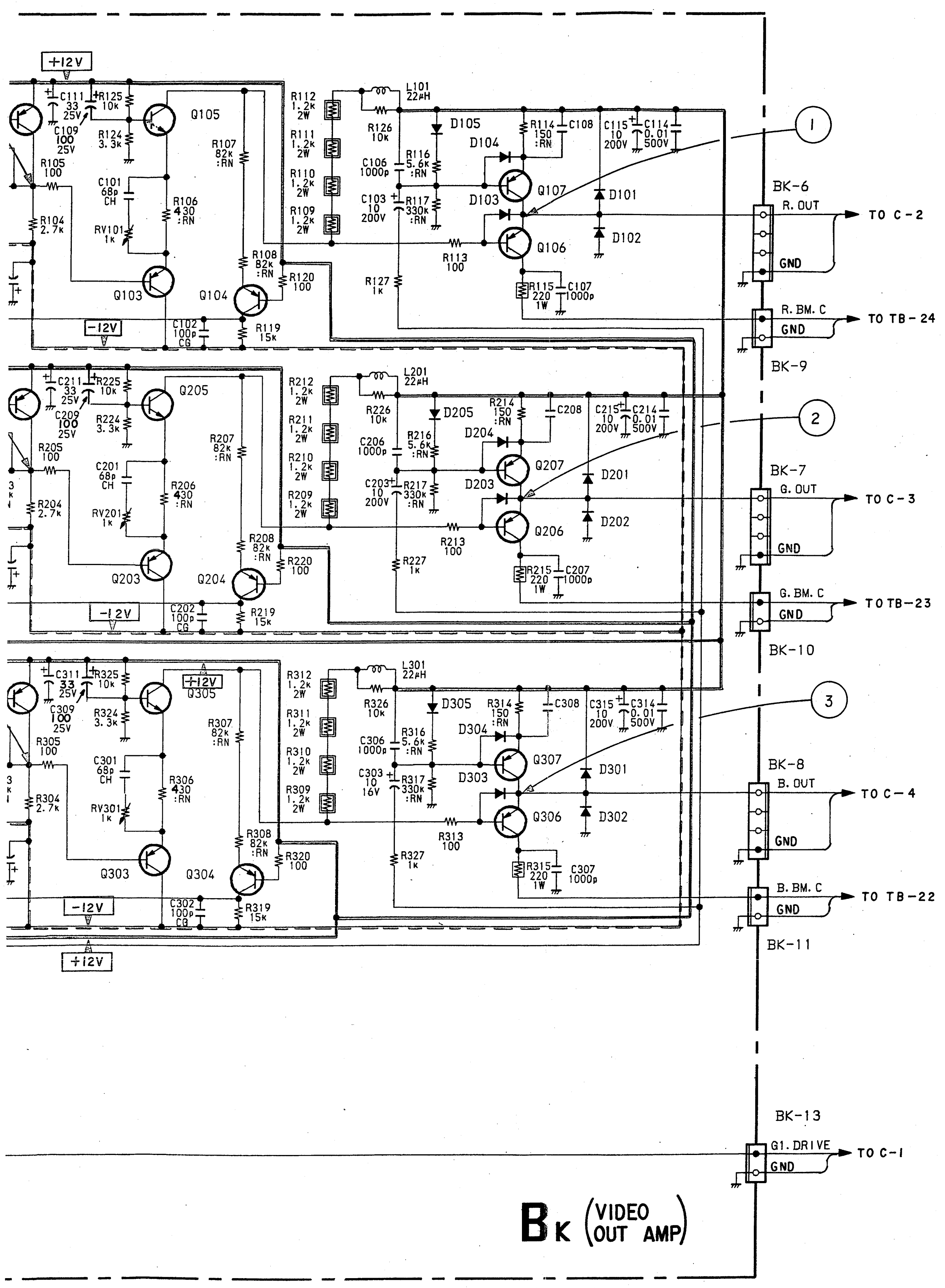
IC														1					
Q			107 106 207 206 307 306			105 205 305	104 102 204 202 304 302	103 203 303	101 201 301				21 20 30 2		1	22 12		11	23 10
D	14	105 205 305	101 102 201 202 301 302	103 203 303	104 204 304							30	13	23		2 15	22 1	12	20 10
ADJ						RV101 RV301	RV201			CV101 CV301	CV201								



BK-13
BK-6
R.OUT
GND
BK-9
R.BMC
BK-7
G.OUT
BK-10
G.BMC
BK 8
B.OUT
BK11
GND B.BMC
BK-1
R IN
GND
R DRIVE
BK-2
G.IN
G DRIVE
BM.P
BK-3
B.IN
B. DRIVE
B.MP
BK-4
BK-5
BK-12
GND
+150
SONY
BK
L CAD
RV101
RV201
RV301
CV101
CV201
CV301
Q101
Q102
Q103
Q104
Q105
Q106
Q107
Q201
Q202
Q203
Q204
Q205
Q206
Q207
Q301
Q302
Q303
Q304
Q305
Q306
Q307
Q1
Q2
Q10
Q11
Q12
Q20
Q21
Q22
Q23
Q30
IC1
D105
D305
1-627-686-11

BA board (SYNC SELECT & SYNC SEP, HOOK UP)

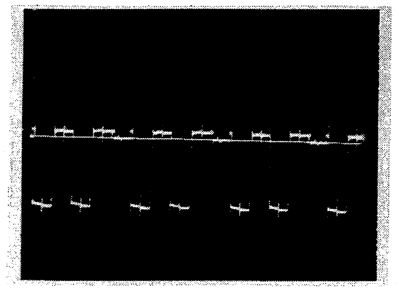

BK-1
TO TB-21
R. IN
GND
R. DRIVE
BM. P
BK-2
TO TB-20
G. IN
GND
G. DRIVE
BM. P
TO EA-5
-150V
GND
+150V
GND
BK-12
BK-3
TO TB-19
B. IN
GND
B. DRIVE
BM. P
BK-5
TO G-3
+12V
GND
-12V
-150V
GND
BK-4
TO TB-18
GND
AFC. P
H. V. BLK
+12V
-12V
-150V
Q101
Q102
Q103
Q104
Q105
Q106
Q107
D101
D102
D103
D104
D105
L101 22μH
CV101 15p
RV101 1k
R112 1.2k 2W
R111 1.2k 2W
R110 1.2k 2W
R109 1.2k 2W
Q201
Q202
Q203
Q204
Q205
Q206
Q207
D201
D202
D203
D204
D205
L201 22μH
CV201 15p
RV201 1k
Q301
Q302
Q303
Q304
Q305
Q306
Q307
D301
D302
D303
D304
D305
L301 22μH
CV301 15p
RV301 1k
L21 56μH
Q20
Q21
Q22
Q23
D20
D21
D22
D23
Q30
D30
IC1 (2/2)
IC1 (1/2)
Q1
Q2
Q10
Q11
Q12
D1
D2
D13
D14
D15
①
②
③
④
⑤
⑥
BK-6
R. OUT
GND
TO C-2
BK-9
R. BM. C
GND
TO TB-24
BK-7
G. OUT
GND
TO C-3
BK-10
G. BM. C
GND
TO TB-23
BK-8
B. OUT
GND
TO C-4
BK-11
B. BM. C
GND
TO TB-22
BK-13
G1. DRIVE
GND
TO C-1
BK (VIDEO OUT AMP)


+12V
Q105
Q103
Q104
-12V
C111 33 25V
R125 10k
C109 100 25V
R124 3.3k
R105 100
R104 2.7k
C101 68p CH
R106 430 :RN
RV101 1k
R107 82k :RN
R108 82k :RN
R120 100
C102 100p CG
R119 15k
R112 1.2k 2W
R111 1.2k 2W
R110 1.2k 2W
R109 1.2k 2W
L101 22μH
R126 10k
C106 1000p
R116 5.6k :RN
C103 10 200V
R117 330k :RN
R113 100
R127 1k
D105
D104
D103
Q107
Q106
D101
D102
R114 150 :RN
C108
C115 10 200V
C114 0.01 500V
R115 220 1W
C107 1000p
①
BK-6
R. OUT
GND
TO C-2
R. BM. C
GND
TO TB-24
BK-9
Q205
Q203
Q204
C211 33 25V
R225 10k
C209 100 25V
R224 3.3k
R205 100
R204 2.7k
C201 68p CH
R206 430 :RN
RV201 1k
R207 82k :RN
R208 82k :RN
R220 100
C202 100p CG
R219 15k
R212 1.2k 2W
R211 1.2k 2W
R210 1.2k 2W
R209 1.2k 2W
L201 22μH
R226 10k
C206 1000p
R216 5.6k :RN
C203 10 200V
R217 330k :RN
R213 100
R227 1k
D205
D204
D203
Q207
Q206
D201
D202
R214 150 :RN
C208
C215 10 200V
C214 0.01 500V
R215 220 1W
C207 1000p
②
BK-7
G. OUT
GND
TO C-3
G. BM. C
GND
TO TB-23
BK-10
+12V
Q305
Q303
Q304
C311 33 25V
R325 10k
C309 100 25V
R324 3.3k
R305 100
R304 2.7k
C301 68p CH
R306 430 :RN
RV301 1k
R307 82k :RN
R308 82k :RN
R320 100
C302 100p CG
R319 15k
R312 1.2k 2W
R311 1.2k 2W
R310 1.2k 2W
R309 1.2k 2W
L301 22μH
R326 10k
C306 1000p
R316 5.6k :RN
C303 10 16V
R317 330k :RN
R313 100
R327 1k
D305
D304
D303
Q307
Q306
D301
D302
R314 150 :RN
C308
C315 10 200V
C314 0.01 500V
R315 220 1W
C307 1000p
③
BK-8
B. OUT
GND
TO C-4
B. BM. C
GND
TO TB-22
BK-11
-12V
+12V
BK-13
G1. DRIVE
GND
TO C-1

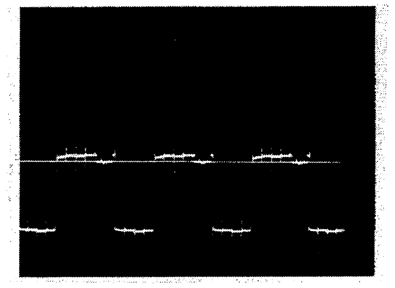
BK (VIDEO OUT AMP)

BK BOARD

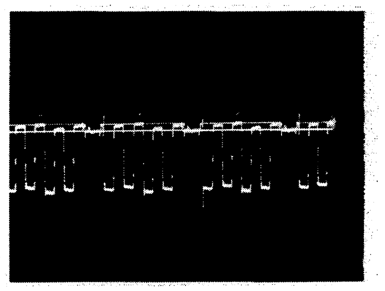
IC1	UPC4558C	LIPPLE FILTER
Q1	2SA1175	INVERTER
2	2SA1175	BUFF.
10	2SC2785	BUFF.
11	2SA1091	BUFF.
12	2SC2551	BUFF.
20	2SC2688	LIPPLE FILTER
21	2SC3068	LIPPLE FILTER
22	2SC2688	LIPPLE FILTER
23	2SD669A	LIPPLE FILTER
30	2SC2688	LIPPLE FILTER
101	2SC2785	R-PRE AMP.
102	2SA1175	R-PRE AMP.
103	2SA844	BUFF.
104	2SA1091	BUFF.
105	2SC3956	BUFF.
106	2SA1142	R-VIDEO OUT
107	2SA1142	R-VIDEO OUT
201	2SC2785	G-PRE AMP.
202	2SA1175	G-PRE AMP.
203	2SA844	BUFF.
204	2SA1091	BUFF.
205	2SC3956	BUFF.
206	2SA1142	G-VIDEO OUT
207	2SA1142	G-VIDEO OUT
301	2SC2785	B-PRE AMP.
302	2SA1175	B-PRE AMP.
303	2SA844	BUFF.
304	2SC3950	BUFF.
305	2SC3956	BUFF.
306	2SA1142	B-VIDEO OUT
307	2SA1142	B-VIDEO OUT
D1	1SS133	INVERTER
2	1SS133	INVERTER
12	1SS83	
13	1SS83	BIAS
14	1SS83	PROTECTOR
30	1SS133	
101	1SS83	PROTECTOR
102	1SS83	PROTECTOR
103	1SS133	PROTECTOR
104	1SS133	PROTECTOR
105	1SS133	BIAS
201	1SS83	PROTECTOR
202	1SS83	PROTECTOR
203	1SS133	PROTECTOR
204	1SS133	PROTECTOR
205	1SS133	BIAS
301	1SS83	PROTECTOR
302	1SS83	PROTECTOR
303	1SS133	PROTECTOR
304	1SS133	PROTECTOR
305	1SS133	BIAS
15	RD20ES–TB	
20	ISS133	
22	ISS133	
23	ISS133	



① *30 Vp-p(H)*
④ *3 Vp-p(H)*



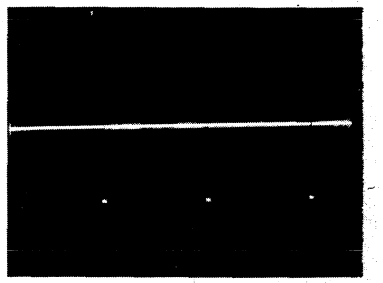
② *35 Vp-p(H)*
⑤ *3.5 Vp-p(H)*



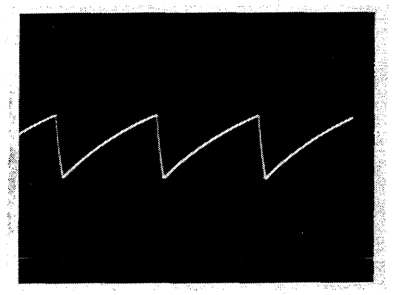
③ *30 Vp-p(H)*
⑥ *3 Vp-p(H)*

D BOARD

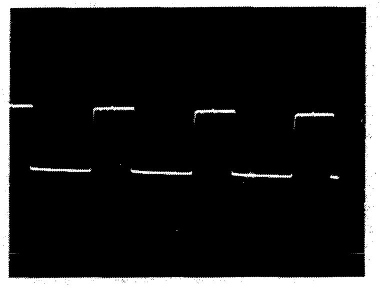
IC1	CX23025	50/60 SELECTOR
2	CXA1268P	
3	TC4053BP	
4	UPC4558C	
5	NJM4558C	
6	TC4066BP	
7	UPC4558C	
8	TC4053BP	
9	UPC4558C	
10	UPC4082C	
11	UPC4558C	
12	UPC4558C	
13	UPC4082C	
14	NJM2903D	
15	NJM2903D	
16	UPC4558C	
17	NJM2903D	
18	TC4069UB	
19	UPC1377C	
20	UPC78M12H	+12V REG.
21	UPC79M12H	-12V REG.
22	UPC79M05H	+5V REG.
23	UPC79M05H	-5V REG.
24	TC4053BP	
25	UPC4082C	
Q1	DTC144ES	
6	2SC2785	
7	2SC2785	
8	DTA144ES	
9	2SC2785	
10	DTC144ES	
D1	1SS119	
2	1SS119	
3	RD7.5ES-B	
4	RD5.1ES-B	
8	1SS119	



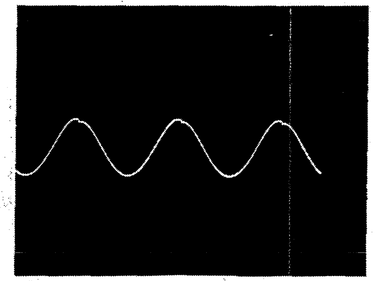
① 12 Vp-p(V)



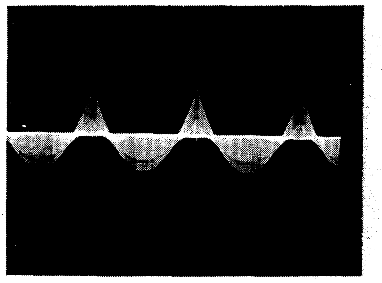
② 4 Vp-p(H)



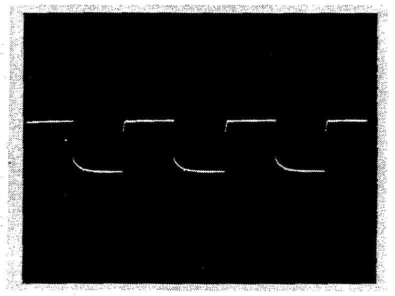
③ 10 Vp-p(H)



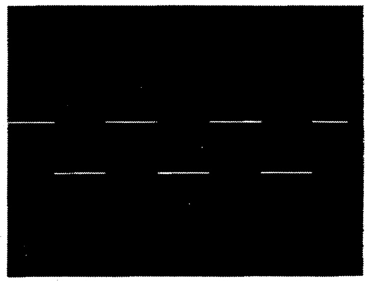
④ 1 Vp-p(V)



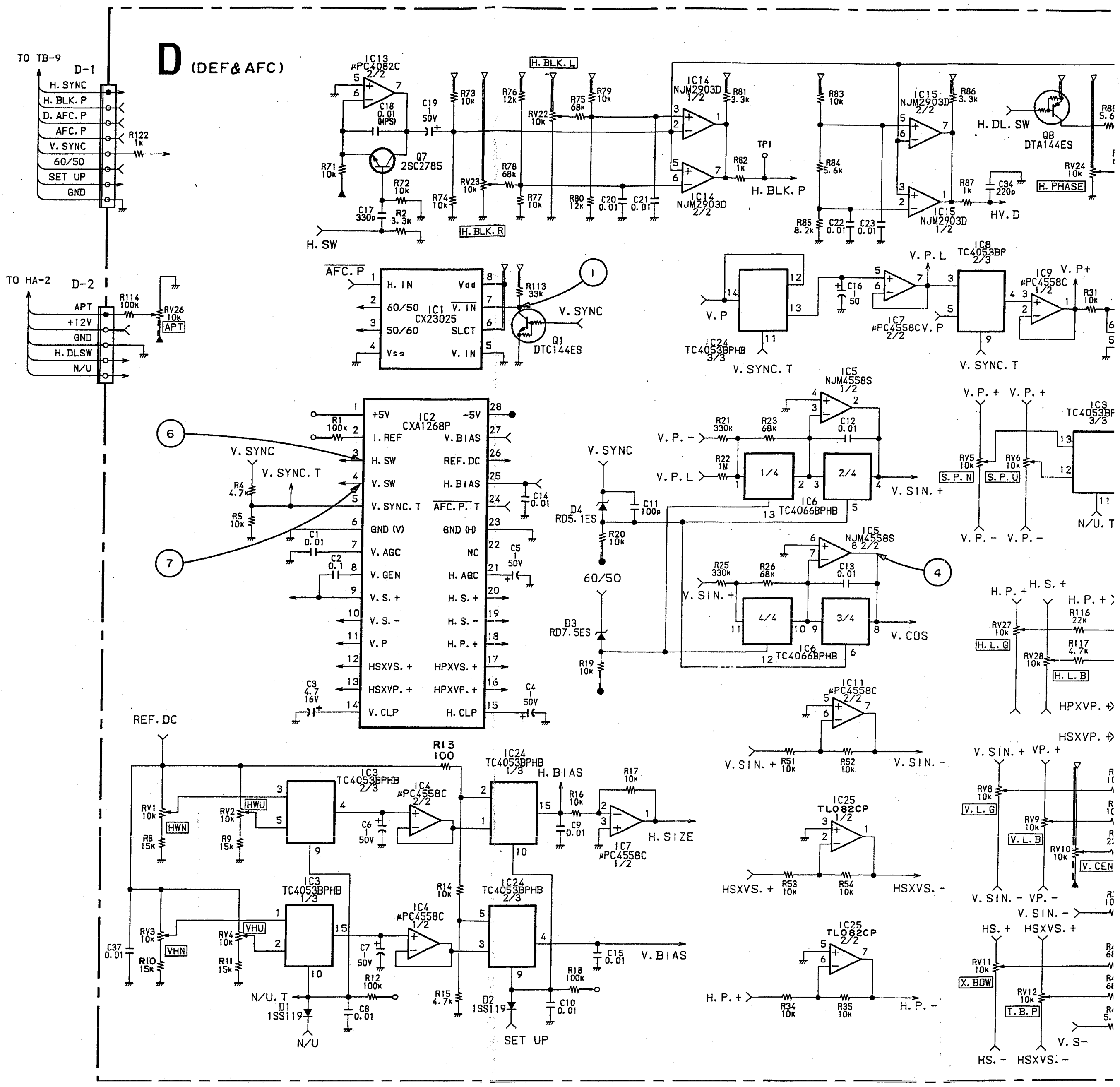
⑤ 3 Vp-p(H)

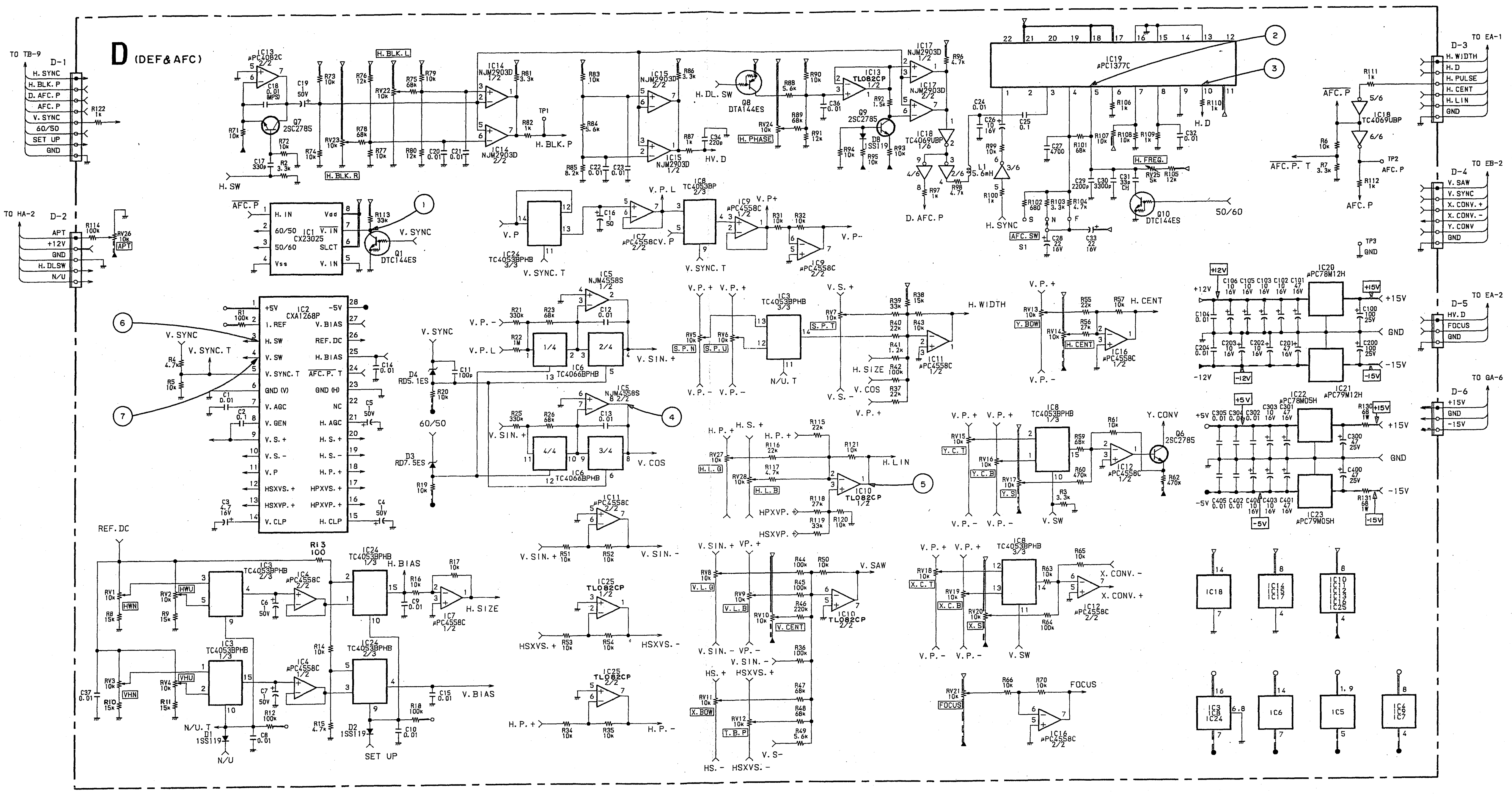


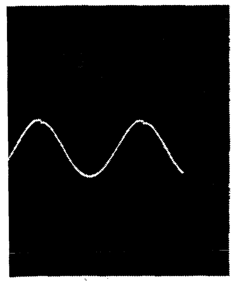
⑥ 3.2 Vp-p(H)



⑦ 3.2 Vp-p(V)


D (DEF& AFC)
TO TB-9
D-1
H. SYNC
H. BLK. P
D. AFC. P
AFC. P
V. SYNC
60/50
SET UP
GND
TO HA-2
D-2
APT
+12V
GND
H. DLSW
N/U
IC13 μPC4082C 2/2
Q7 2SC2785
H. BLK. L
H. BLK. R
H. SW
IC14 NJM2903D 1/2
IC14 NJM2903D 2/2
IC15 NJM2903D 2/2
IC15 NJM2903D 1/2
TP1
H. BLK. P
Q8 DTA144ES
H. DL. SW
H. PHASE
HV. D
AFC. P
IC1 CX23025
H. IN
60/50
50/60
Vss
Vdd
V. IN
SLCT
V. SYNC
Q1 DTC144ES
IC24 TC4053BPHB 3/3
V. P
V. SYNC. T
IC7 μPC4558C 2/2
IC8 TC4053BP 2/3
IC9 μPC4558C 1/2
V. P+
IC2 CXA1268P
+5V
I. REF
H. SW
V. SW
V. SYNC. T
GND (V)
V. AGC
V. GEN
V. S. +
V. S. -
V. P
HSXVS. +
HSXVP. +
V. CLP
-5V
V. BIAS
REF. DC
H. BIAS
AFC. P. T
GND (H)
NC
H. AGC
H. S. +
H. S. -
H. P. +
HPXVS. +
HPXVP. +
H. CLP
D4 RD5. 1ES
D3 RD7. 5ES
60/50
IC5 NJM4558S 1/2
IC5 NJM4558S 2/2
IC6 TC4066BPHB
V. P. -
V. P. L
V. SIN. +
V. COS
IC3 TC4053BPHB 3/3
S. P. N
S. P. U
N/U. T
V. P. + V. P. +
V. P. - V. P. -
H. P. +
H. S. +
H. L. G
H. L. B
HPXVP.
HSXVP.
IC11 μPC4558C 2/2
V. SIN. +
V. SIN. -
IC25 TL082CP 1/2
IC25 TL082CP 2/2
HSXVS. +
HSXVS. -
H. P. +
H. P. -
V. L. G
V. L. B
V. CEN
X. BOW
T. B. P
REF. DC
IC3 TC4053BPHB 2/3
IC3 TC4053BPHB 1/3
IC4 μPC4558C 2/2
IC4 μPC4558C 1/2
IC24 TC4053BPHB 1/3
IC24 TC4053BPHB 2/3
IC7 μPC4558C 1/2
H. SIZE
V. BIAS
HWN
HWU
VHN
VHU
D1 1SS119
D2 1SS119
N/U. T
N/U
SET UP
R13 100

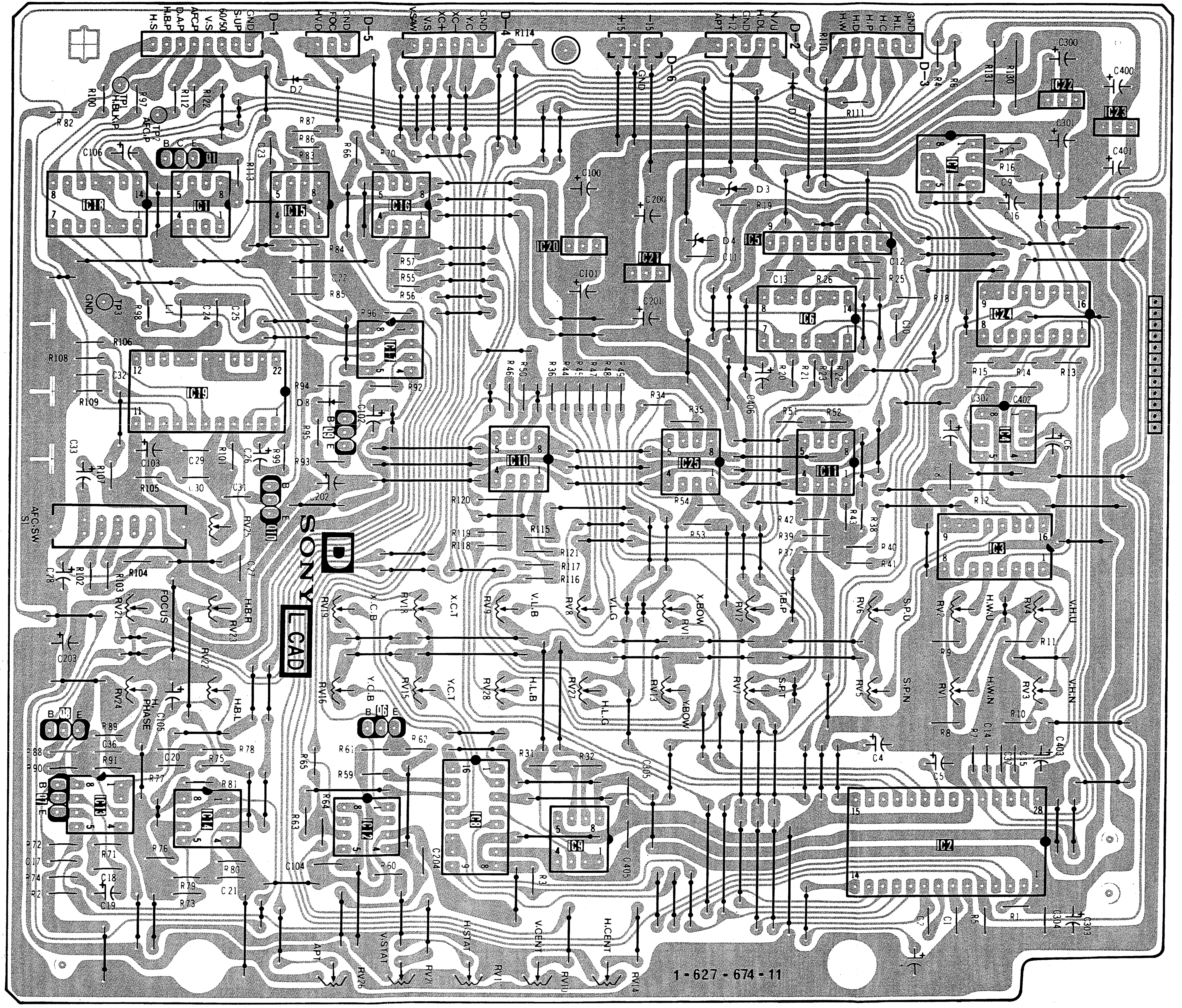

D (DEF & AFC)
TO TB-9
D-1
H. SYNC
H. BLK. P
D. AFC. P
AFC. P
V. SYNC
60/50
SET UP
GND
TO HA-2
D-2
APT
+12V
GND
H. DLSW
N/U
IC1 CX23025
IC2 CXA1268P
IC19 μPC1377C
IC20 μPC78M12H
IC21 μPC79M12H
IC22 μPC78M05H
IC23 μPC79M05H
H. BLK. L
H. BLK. R
H. BLK. P
H. SW
H. DL. SW
HV. D
H. PHASE
D. AFC. P
H. SYNC
H. FREQ.
AFC. SW
50/60
V. SYNC
V. SYNC. T
V. P
V. P. L
V. P+
V. P-
V. SIN. +
V. SIN. -
V. COS
H. WIDTH
H. CENT
H. SIZE
H. LIN
H. BIAS
V. BIAS
Y. CONV
X. CONV. +
X. CONV. -
V. SAW
FOCUS
REF. DC
SET UP
N/U
N/U. T
HPXVP.
HSXVP.
HSXVS. +
HSXVS. -
H. P. +
H. P. -
TO EA-1
D-3
H. WIDTH
H. D
H. PULSE
H. CENT
H. LIN
GND
TO EB-2
D-4
V. SAW
V. SYNC
X. CONV. +
X. CONV. -
Y. CONV
GND
TO EA-2
D-5
HV. D
FOCUS
GND
TO GA-6
D-6
+15V
GND
-15V
AFC. P. T
AFC. P
+12V
-12V
+15V
-15V
+5V
-5V
GND

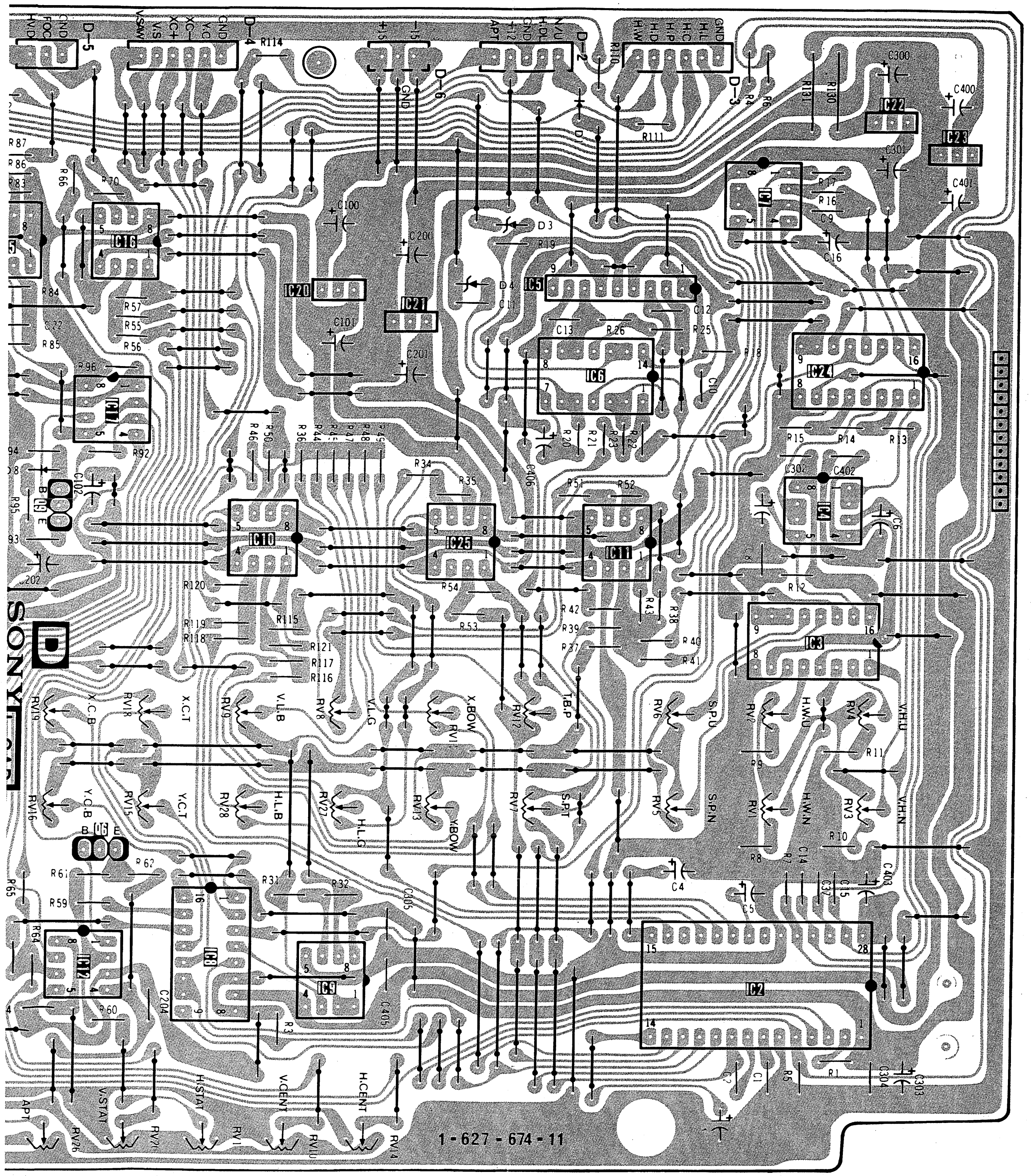


D board (DEF & AFC)

IC	Q	RV	TP
22			
			1
23			
			2
	1		
7			
18 1 15 16			
5			
20 21			
			3
6 24			
17			
19			
4	9		
10 25 11			
		25	
	10		
3			
		21 19,18,9,8 12,6,2,4	
		23 11	
		22	
	8	24 16,15,28,27,13,7,5,1,3	
	6		
	7		
13 14 12 8 9 2			
		26,20,17,10,14	

170029911


D-1
GND
SUP
60/50
V.S
AFCP
D.A.P
H.B.P
H.S
D-5
GND
FOC
H.V.D
VSAW
V.S
XC+
XC-
YC
GND
D-4
R114
+15
-15
GND
D-6
APT
GND
+12
GND
H.D.I
N.I.J
D-2
H.W
H.D
H.P
H.C
H.L
GND
D-3
IC1
IC2
IC3
IC5
IC6
IC8
IC9
IC10
IC11
IC14
IC15
IC16
IC17
IC18
IC19
IC20
IC21
IC22
IC23
IC24
IC25
TP1 H.BLK.P
TP2 AFCP
TP3 GND
AFC SW S1
FOCUS
H.PHASE
H.B.R
H.B.L
X.C.B
X.C.T
Y.C.B
Y.C.T
V.L.B
V.L.G
H.L.B
H.L.G
X.BOW
Y.BOW
T.B.P
S.P.U
S.P.T
S.P.N
H.W.U
H.W.N
V.H.U
V.H.N
APT
V.STAT
H.STAT
V.CENT
H.CENT
SONY
L CAD
1-627-674-11


D-5
GND
FOC
H.VD
D-4
V.SAW
V.S
XC+
XC-
Y.C
GND
R114
+15
-15
GND
D-6
APT
+12
GND
H.DL
N.V.U
D-2
R110
H.W
H.D
H.P
H.C
H.L
GND
D-3
C300
C400
IC22
IC23
C301
C401
IC16
IC20
IC21
IC5
IC6
IC7
IC24
IC10
IC25
IC11
IC4
IC3
IC2
IC8
IC9
IC12
IC17
SONY
X.C.B
X.C.T
V.L.B
V.L.G
X.BOW
T.B.P
S.P.U
H.W.U
V.H.U
Y.C.B
Y.C.T
H.L.B
H.L.G
Y.BOW
S.P.T
S.P.N
H.W.N
V.H.N
APT
V.STAT
H.STAT
V.CENT
H.CENT
1-627-674-11

EA BOARD

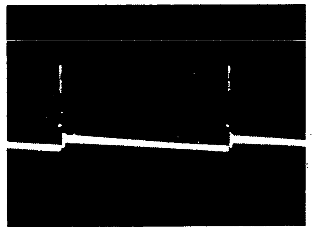
IC1	UPC1394C	P.W.M CONTROL
2	UPC1394C	P.W.M CONTROL
3	TL082CPC	BUFF/COMPARATOR
4	NJM2903D	
5	UPC4558C	H.CENT/O.C.P
Q1	2SA1175	H.PULSE BUFFER
2	2SA979	H.LIN AMP
3	2SD774	H.LIN AMP
4	2SA1173	H.LIN AMP OUT
5	2SA473	H.LIN AMP OUT
6	2SC2688	P.W.M. DRIVE
7	2SC2752	P.W.M. OUT
8	2SA1091	O.C.P
9	2SA1175	O.C.P
10	2SC2688	H.DRIVE
11	2SD1399CA	H.OUT
12	2SD1134	H.CENT
13	2SB858	H.CENT
14	2SC2688	DC-D CONV.DRVIE
15	2SC2551	O.V.P
16	2SC2534	DC-DC CONV.
17	2SC2688	
19	2SA1175	
20	2SC2785	
1	RD12ES-B2	BIAS
3	1SS119	BIAS
4	1SS119	BIAS
5	RH-1A	H.DRIVE
6	RD7.5ES-B2	PROTECTOR
7	RH-1A	PROTECTOR
8	ERD28-04S	
9	RH-1A	H.P.RECT
10	RH-1A	H.P.RECT
12	V11N	
13	RH-1A	HV CONV
14	RH-1A	DC-DC CONV.
15	RH-1A	DC-DC CONV.
16	RH-1A	
17	RD12ES-B2	
19	1SS119	
20	1SS119	
24	IC UPC574J	
25	1SS119	
26	1SS119	
27	CR02AM-4	
28	1SS119	
29	IC UPC574J	
30	1SS119	

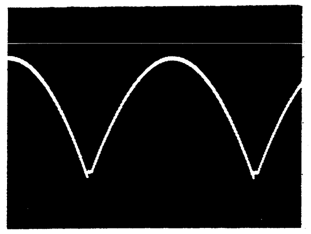
EB BOARD

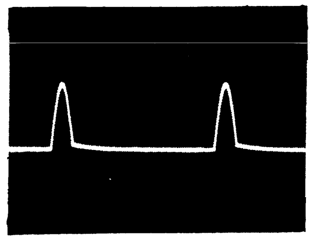
Q1	2SA979	V.AMP
2	2SD774	V.AMP
3	2SA893A	V.AMP
4	2SC1890A	V.AMP
5	2SB860	V.AMP OUT
6	2SD1137	V.AMP OUT
7	2SB861	V.RETRACE SW
8	2SC2551	V.RETRACE SW
9	2SC2785	
10	2SA1175	
D1	GP08D	DC.STOPPER
2	GP08D	DC.STOPPER
3	1SS119	BIAS
4	1SS119	BIAS
5	1SS119	BIAS
6	1SS119	PROTECTOR

C BOARD

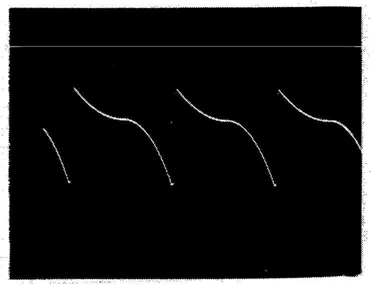
Q1	2SC3675	
2	2SC3675	
3	2SC2551	
4	2SC2785	
5	2SC2785	
6	2SC2551	
7	2SC3675	


① 1100 Vp-p(V)

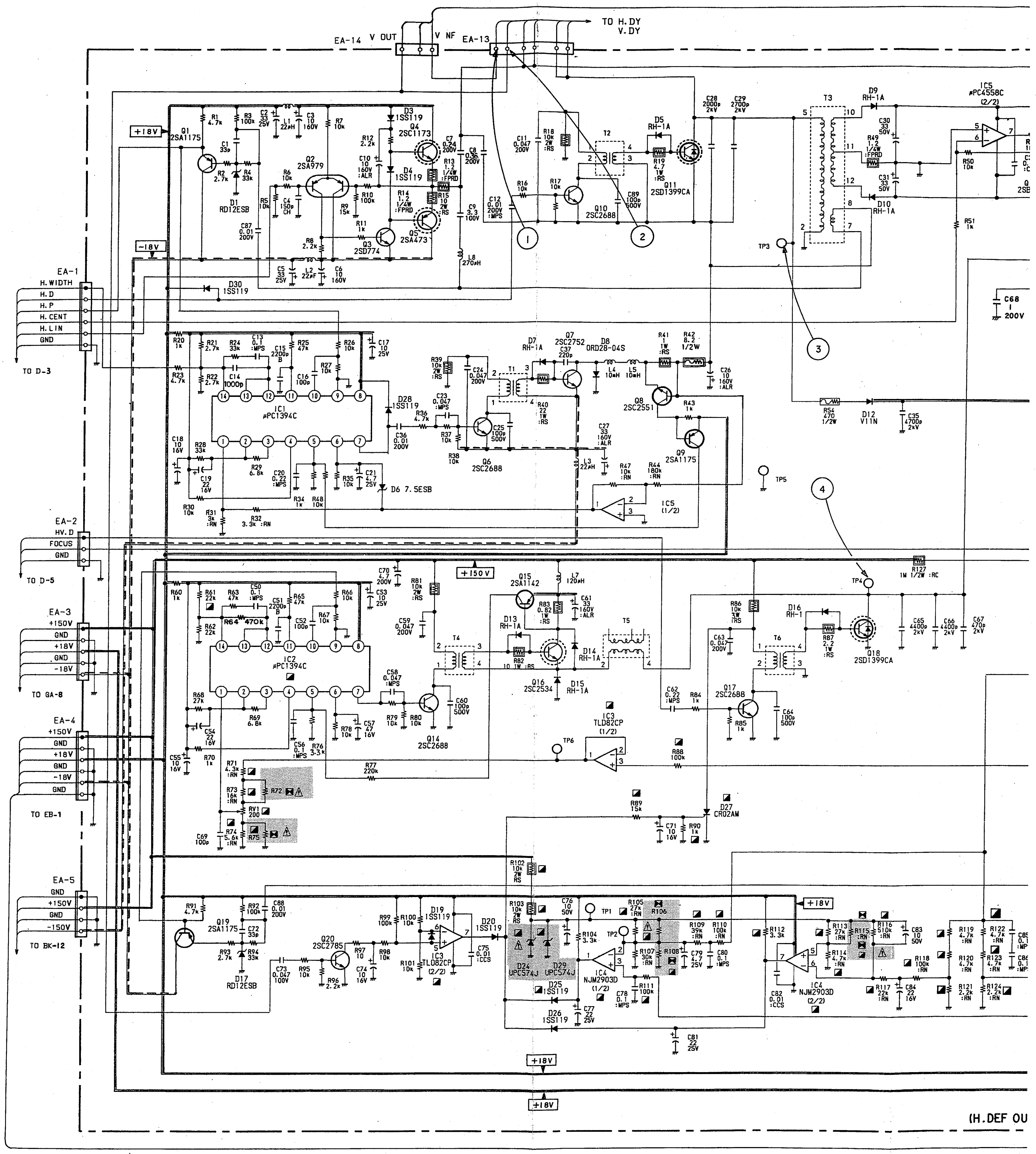

② 3.7 Vp-p(V)


③ 1250 Vp-p(H)

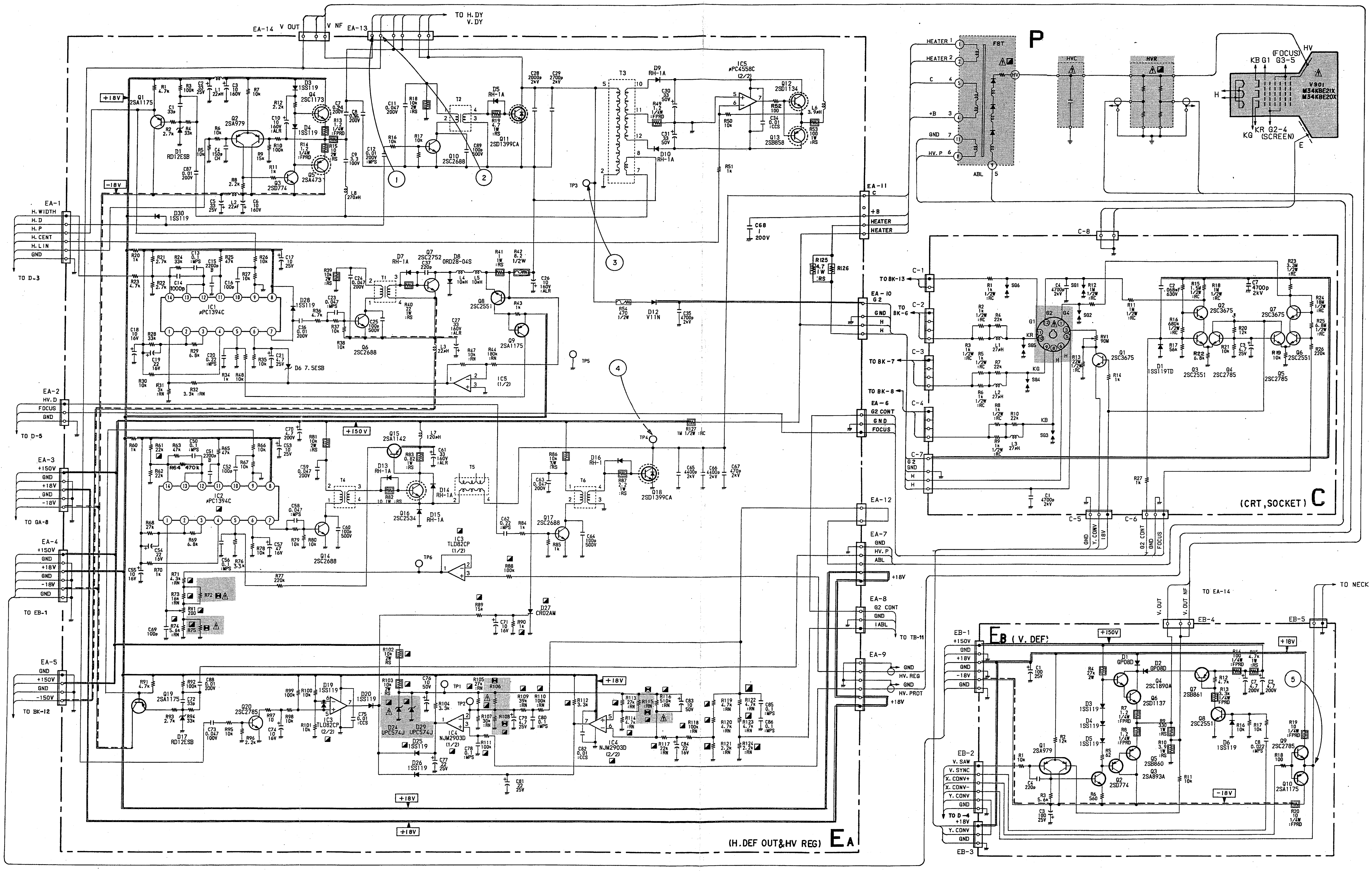
④ 1100 Vp-p(H)


⑤ 1.6 Vp-p(V)

EA board (H OUT)
EB board (V OUT)

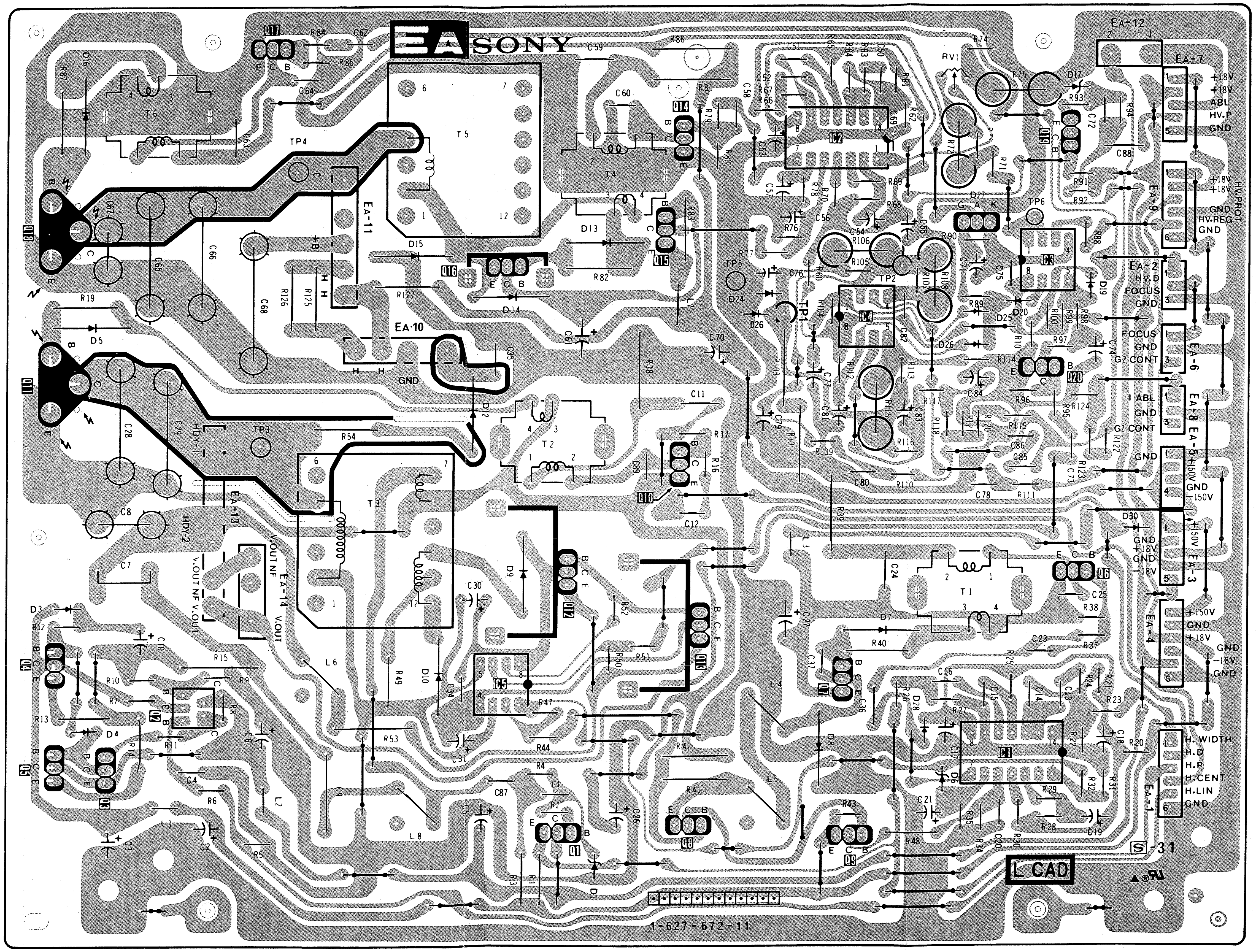

EA-14
V OUT
V NF
EA-13
TO H.DY
V.DY
+18V
-18V
Q1 2SA1175
R1 4.7k
R3 100k
C2 33 25V
L1 22μH
C3 10 160V
R7 10k
C1 33p
R2 2.7k
R4 33k
D1 RD12ESB
Q2 2SA979
R6 10k
R5 10k
C4 150p CH
R9 15k
R10 100k
C87 0.01 200V
D3 1SS119
Q4 2SC1173
R12 2.2k
C10 10 160V :ALR
D4 1SS119
R13 1.2 1/4W :FPRD
R14 1.2 1/4W :FPRD
R15 10 2W :RS
Q5 2SA473
R11 1k
Q3 2SD774
R8 2.2k
C5 33 25V
L2 22μF
C6 10 160V
C7 0.24 200V
C8 0.36 200V
C9 3.3 100V
L8 270μH
C12 0.01 200V :MPS
C11 0.047 200V
R18 10k 2W :RS
R16 10k
R17 10k
T2
Q10 2SC2688
C89 100p 500V
D5 RH-1A
R19 4.7 1W :RS
Q11 2SD1399CA
C28 2000p 2kV
C29 2700p 2kV
T3
D9 RH-1A
C30 33 50V
R49 1.2 1/4W :FPRD
C31 33 50V
D10 RH-1A
IC5 μPC4558C (2/2)
R50 10k
R51 1k
TP3
C68 1 200V
EA-1
H.WIDTH
H.D
H.P
H.CENT
H.LIN
GND
TO D-3
D30 1SS119
R20 1k
R21 2.7k
R24 33k
C13 0.1 :MPS
C15 2200p B
R25 47k
R26 10k
C17 10 25V
R23 4.7k
R22 2.7k
C14 1000p
C16 100p
R27 10k
IC1 μPC1394C
C18 10 16V
R28 33k
C19 22 16V
R29 6.8k
C20 0.22 :MPS
R35 10k
C21 4.7 25V
D6 7.5ESB
R30 10k
R31 3k :RN
R32 3.3k :RN
R34 1k
R48 10k
D28 1SS119
C36 0.01 200V
R36 4.7k
C23 0.047 :MPS
R37 10k
R38 10k
R39 10k 2W :RS
C24 0.047 200V
T1
R40 22 1W :RS
C25 100p 500V
Q6 2SC2688
D7 RH-1A
Q7 2SC2752
C37 220p
D8 0RD28-04S
L4 10mH
L5 10mH
R41 1 1W :RS
R42 8.2 1/2W
C26 10 160V :ALR
Q8 2SC2551
R43 1k
Q9 2SA1175
C27 33 160V :ALR
L3 22μH
R47 10k :RN
R44 180k :RN
IC5 (1/2)
TP5
R54 470 1/2W
D12 V11N
C35 4700p 2kV
EA-2
HV.D
FOCUS
GND
TO D-5
EA-3
+150V
GND
+18V
GND
-18V
TO GA-8
EA-4
+150V
GND
+18V
GND
-18V
GND
TO EB-1
R60 1k
R61 22k
R63 47k
C50 0.1 :MPS
C51 2200p B
R65 47k
R66 10k
C53 10 25V
R62 22k
R64 470k
C52 100p
R67 10k
IC2 μPC1394C
R68 27k
R69 6.8k
C54 22 16V
C55 10 16V
R70 1k
C56 0.1 :MPS
R76 3.3k
R78 10k
C57 47 16V
R71 4.3k :RN
R73 16k :RN
R72
RV1 200
R74 5.6k :RN
R75
C69 100p
R77 220k
C70 4.7 200V
R81 10k 2W :RS
C59 0.047 200V
C58 0.047 :MPS
R79 10k
R80 10k
C60 100p 500V
Q14 2SC2688
+150V
Q15 2SA1142
L7 120μH
R83 0.82 1W :RS
C61 33 160V :ALR
D13 RH-1A
T4
R82 10 1W :RS
Q16 2SC2534
D14 RH-1A
D15 RH-1A
T5
C62 0.22 :MPS
R84 1k
Q17 2SC2688
R85 1k
C64 100p 500V
C63 0.047 200V
R86 10k 3W :RS
T6
D16 RH-1
R87 2.2 1W :RS
Q18 2SD1399CA
TP4
R127 1M 1/2W :RC
C65 4400p 2kV
C66 4400p 2kV
C67 470p 2kV
IC3 TLD82CP (1/2)
TP6
R88 100k
R89 15k
C71 10 16V
R90 1k
D27 CR02AM
EA-5
GND
+150V
GND
-150V
TO BK-12
R91 4.7k
Q19 2SA1175
R92 100k
C88 0.01 200V
C72 33p
R93 2.7k
R94 33k
D17 RD12ESB
C73 0.047 100V
R95 10k
Q20 2SC2785
R96 2.2k
R97 10
C74 10 16V
R98 10k
R99 100k
R100 10k
R101 10k
D19 1SS119
IC3 TL082CP (2/2)
C75 0.01 :CCS
D20 1SS119
R102 10k 2W RS
R103 10k 2W RS
D24 UPC574J
D29 UPC574J
D25 1SS119
D26 1SS119
C76 10 50V
C77 22 25V
R104 3.3k
TP1
TP2
R105 27k :RN
R106
R107 30k :RN
R108
IC4 NJM2903D (1/2)
C78 0.1 :MPS
R111 100k
C79 4.7 25V
C80 0.1 :MPS
R109 39k :RN
R110 100k :RN
C81 22 25V
R112 3.3k
C82 0.01 :CCS
IC4 NJM2903D (2/2)
R113 27k :RN
R114 4.7k :RN
R115 :RN
R116 510k :RN
C83 10 50V
R117 22k :RN
C84 22 16V
R118 100k :RN
R119 4.7k :RN
R120 4.7k :RN
R121 2.2k :RN
R122 4.7k :RN
R123 4.7k :RN
R124 2.2k :RN
+18V
(H.DEF OU

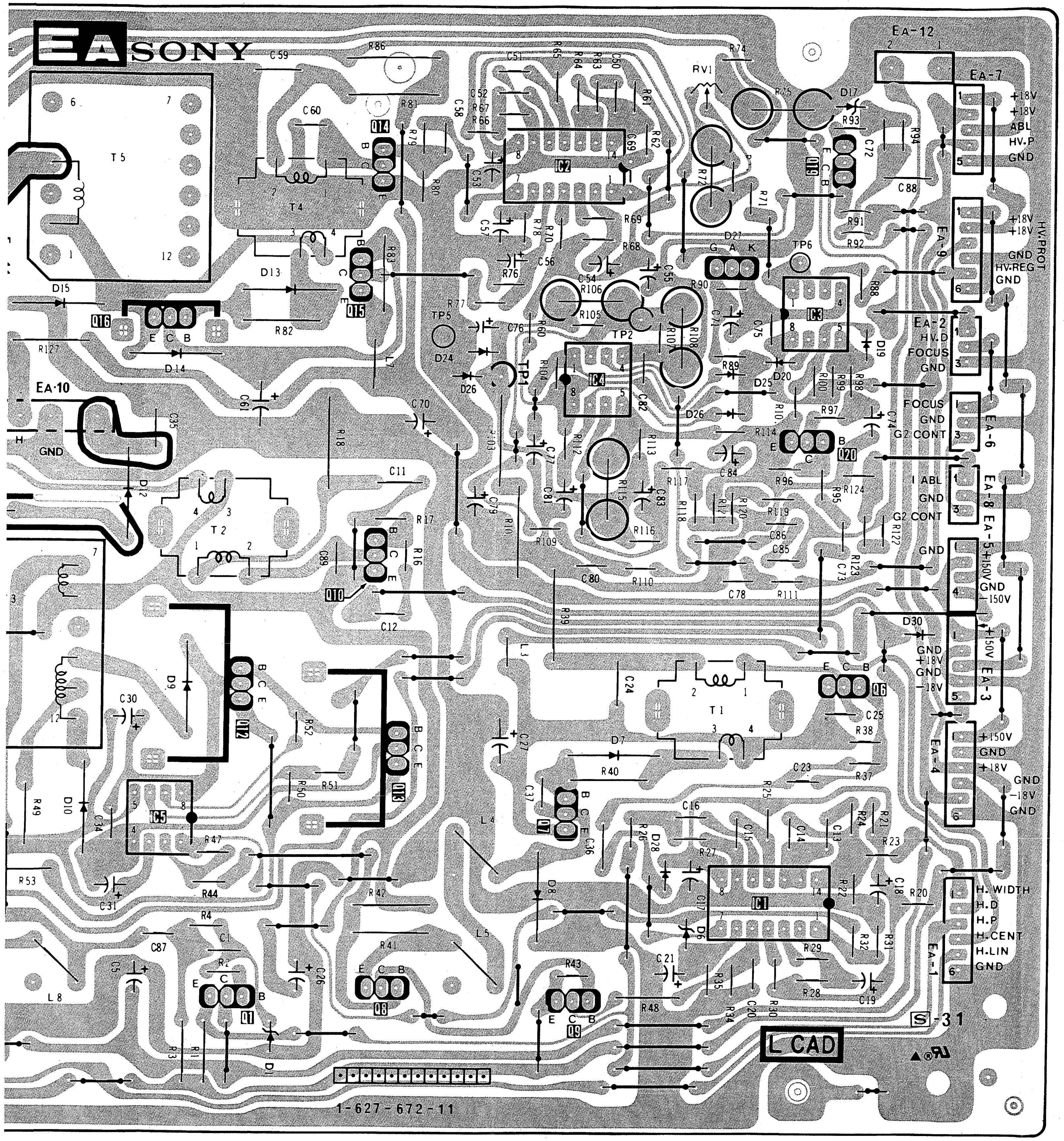
EA board (H OUT)
EB board (V OUT)


TO H.DY
V.DY
EA-14
V OUT
V NF
EA-13
EA-1
H.WIDTH
H.D
H.P
H.CENT
H.LIN
GND
TO D-3
EA-2
HV.D
FOCUS
GND
TO D-5
EA-3
+150V
GND
+18V
GND
-18V
TO GA-8
EA-4
TO EB-1
EA-5
TO BK-12
IC1 μPC1394C
IC2 μPC1394C
IC3 TL082CP
IC4 NJM2903D
IC5 μPC4558C
T3
TP3
TP4
TP5
TP6
EA-11
C
+B
HEATER
HEATER
EA-10
G2
GND
H
H
EA-6
G2 CONT
GND
FOCUS
EA-12
EA-7
GND
HV.P
ABL
EA-8
G2 CONT
GND
IABL
TO TB-11
EA-9
GND
HV.REG
GND
HV.PROT
+18V
(H.DEF OUT&HV REG)
EA
P
FBT
HVC
HVR
HEATER 1
HEATER 2
C
+B
GND
HV.P
ABL
(FOCUS)
HV
KB G1 G3-5
V901
M34KBE21X
M34KBE20X
KR G2-4
KG (SCREEN)
E
C-8
C-1
TO BK-13
C-2
TO BK-6
C-3
TO BK-7
C-4
TO BK-8
C-7
G2
GND
H
H
C-5
C-6
GND
Y.CONV
18V
G2 CONT
GND
FOCUS
(CRT,SOCKET)
C
TO NECK ASSY
TO EA-14
V.OUT
V.OUT NF
EB-4
EB-5
EB-1
+150V
GND
+18V
GND
-18V
GND
EB (V.DEF)
EB-2
V.SAW
V.SYNC
X.CONV+
X.CONV-
Y.CONV
GND
TO D-4
+18V
Y.CONV
GND
EB-3
+150V
+18V
-18V

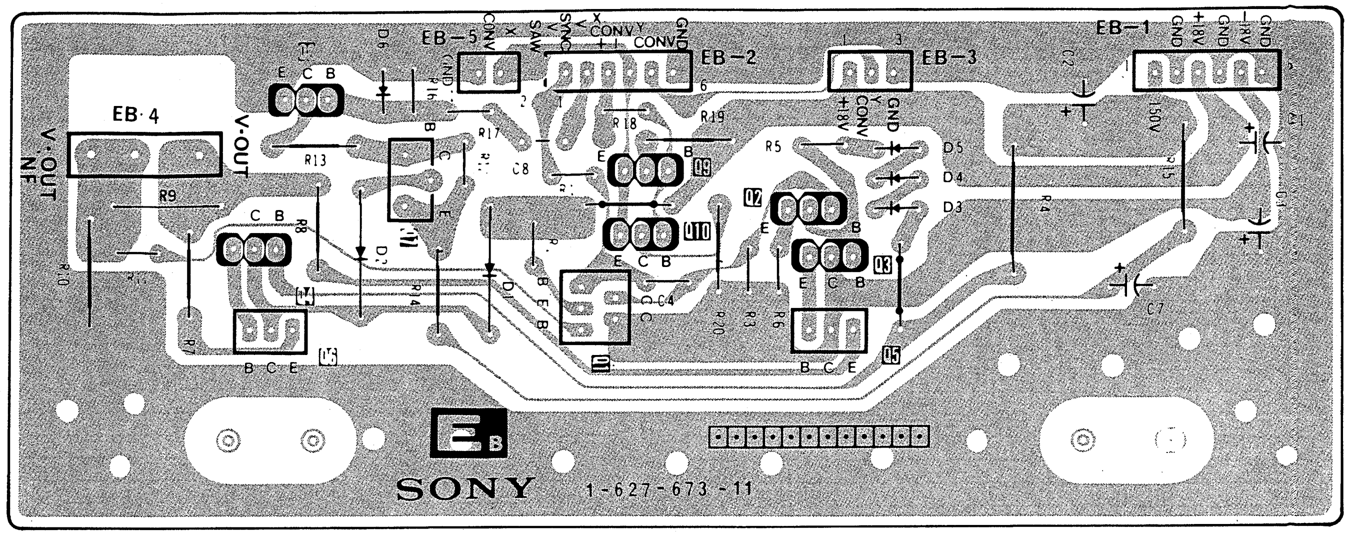
EA board (H OUT)

IC	Q	D	RV	TP
	17	16	1	
		17		
	14			
2	19			4
		27		6
	18			
3	15	13 15		
	16			5 2
4		19		1
		14 20		
		5 24 25		
		29 26		
	20			
	11			
		12		3
	10			
		30		
	6	9		
	12	3 7		
	4 13			
5	7	10		
		28		
	2	8		
		4		
1	5			
		6		
	3			
	8			
	1 9			
		1		

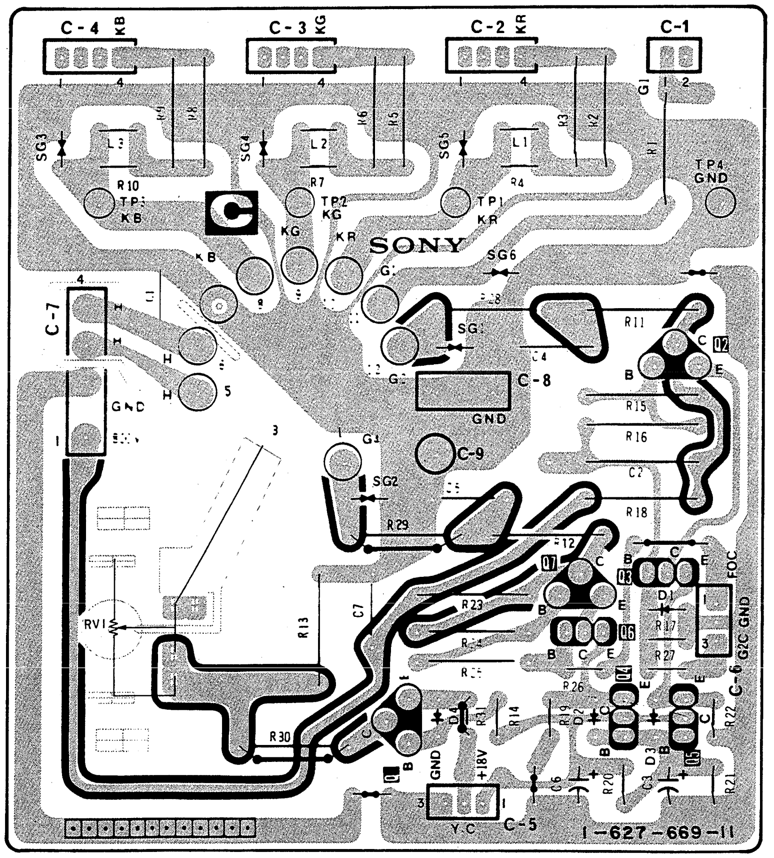

EA SONY
EA-1
EA-2
EA-3
EA-4
EA-5
EA-6
EA-7
EA-8
EA-9
EA-10
EA-11
EA-12
EA-13
EA-14
+18V
+18V
ABL
HV.P
GND
HV/PROT
HV.REG
HV.D
FOCUS
G2 CONT
ABL
+150V
-150V
-18V
H. WIDTH
H.D
H.P
H.CENT
H.LIN
V.OUT NF
V.OUT
HDY-1
HDY-2
H
GND
+B
T1
T2
T3
T4
T5
T6
TP1
TP2
TP3
TP4
TP5
TP6
RV1
IC1
IC2
IC3
IC4
IC5
E C B
1-627-672-11
L CAD
S-31


EA
SONY
T5
T4
T2
T1
IC1
IC2
IC3
IC4
IC5
RV1
TP1
TP2
TP5
TP6
EA-1
EA-2
EA-3
EA-4
EA-5
EA-6
EA-7
EA-8
EA-9
EA-10
EA-12
+18V
ABL
HV.P
GND
HV.PROT
HV.REG
HV.D
FOCUS
G2 CONT
+150V
-150V
-18V
H.WIDTH
H.D
H.P
H.CENT
H.LIN
S-31
L CAD
1-627-672-11

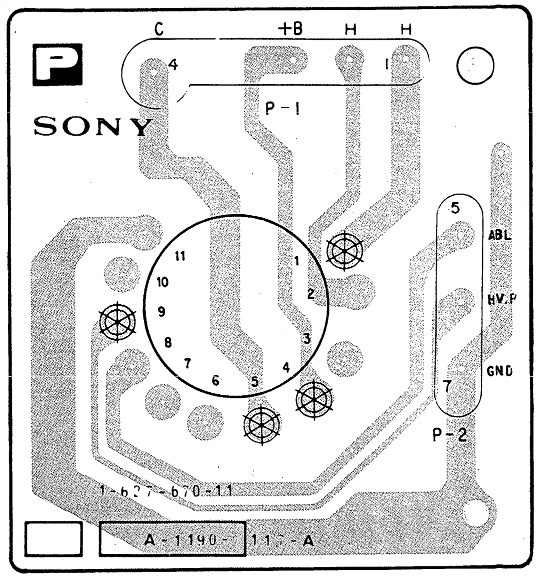
EB board (V DEF)


EB-1
EB-2
EB-3
EB-4
EB-5
V.OUT
NF
V.OUT
CONV
SAW
SYNC
GND
+18V
-18V
+150V
SONY
1-627-673-11

C board (CRT SOCKET)


C-1
C-2
C-3
C-4
C-5
C-6
C-7
C-8
C-9
KB
KG
KR
G1
G2
SONY
RV1
TP1
TP2
TP3
TP4
GND
+18V
FOC
G2C
1-627-669-11

P board (FBT)


P
SONY
C
+B
H
P-1
P-2
ABL
HV.P
GND
1-627-670-11
A-1190-11-A

5. DIAGRAMS

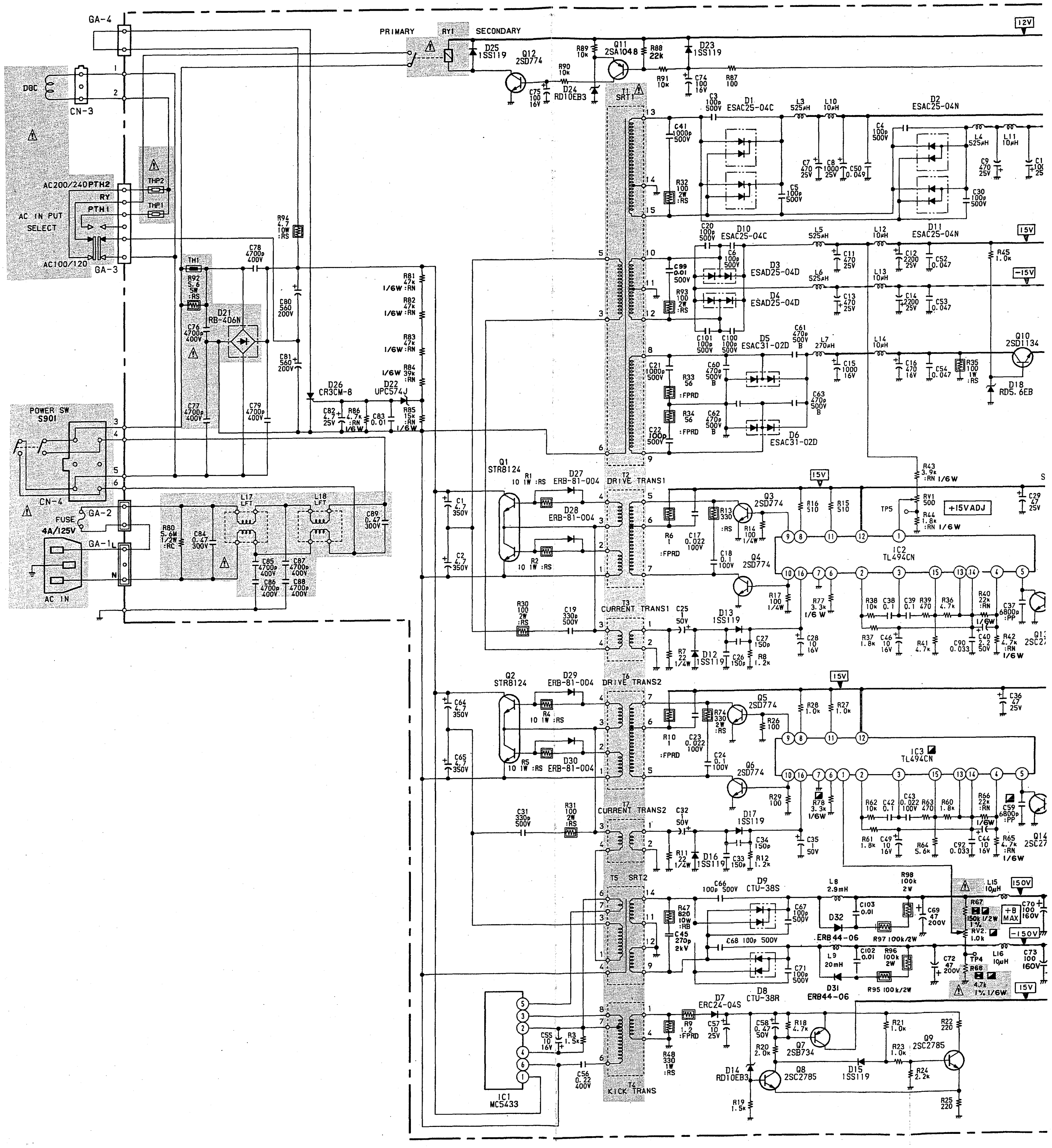
GA BOARD

IC1	MC5433	STARTER
2	TL494CN	DC REG
3	TL494CN	DC REG
Q1	STR8124	DC-DC CONV.
2	STR8124	DC-DC CONV.
3	2SD774	CONV. DRIVE
4	2SD774	CONV. DRIVE
5	2SD774	CONV. DRIVE
6	2SD774	CONV. DRIVE
7	2SB734	SOFT. START
8	2SC2785	SOFT. START
9	2SC2785	SOFT. START
10	2SD1134	+5V REG.
11	2SA1048	D.G. CONTROL
12	2SD774	D.G. CONTROL
13	2SC2785	O.V.P SW
14	2SC2785	O.V.P SW
D1	ESAC25-04C	+18V RECT
2	ESAC25-04N	-18V RECT
3	ESAD25-04D	+15V RECT
4	ESAD25-04D	-15V RECT
5	ESAC31-02D	+5V RECT
6	ESAC31-02D	-5V RECT
7	ERC24-045	START. RECT
8	CTU-38R	-150V RECT
9	CTU-38S	+150V RECT
10	ESAC25-04C	+18V RECT
11	ESAC25-04N	-18V RECT
12	1SS119	O.C.P RECT
13	1SS119	O.C.P RECT
14	RD10EB3T	STARTER
15	1SS119	STARTER
16	1SS119	O.C.P RECT
17	1SS119	O.C.P RECT
18	RD5.6E-B2TN	+5V REG
20	SIB01-02	DC. STOPPER
21	RB406N	AC RECT
22	uPC574J	O.V.P
23	1SS119	DISCHARGE
24	RD10EB3T	+10V REG
25	1SS119	SW PROTECT
26	CR3CM-8	O.V.P
27	ERB81-004	CONV. DRIVE
28	ERB81-004	CONV. DRIVE
29	ERB81-004	CONV. DRIVE
30	ERB81-004	CONV. DRIVE
31	ERB44-06	
32	ERB44-06	

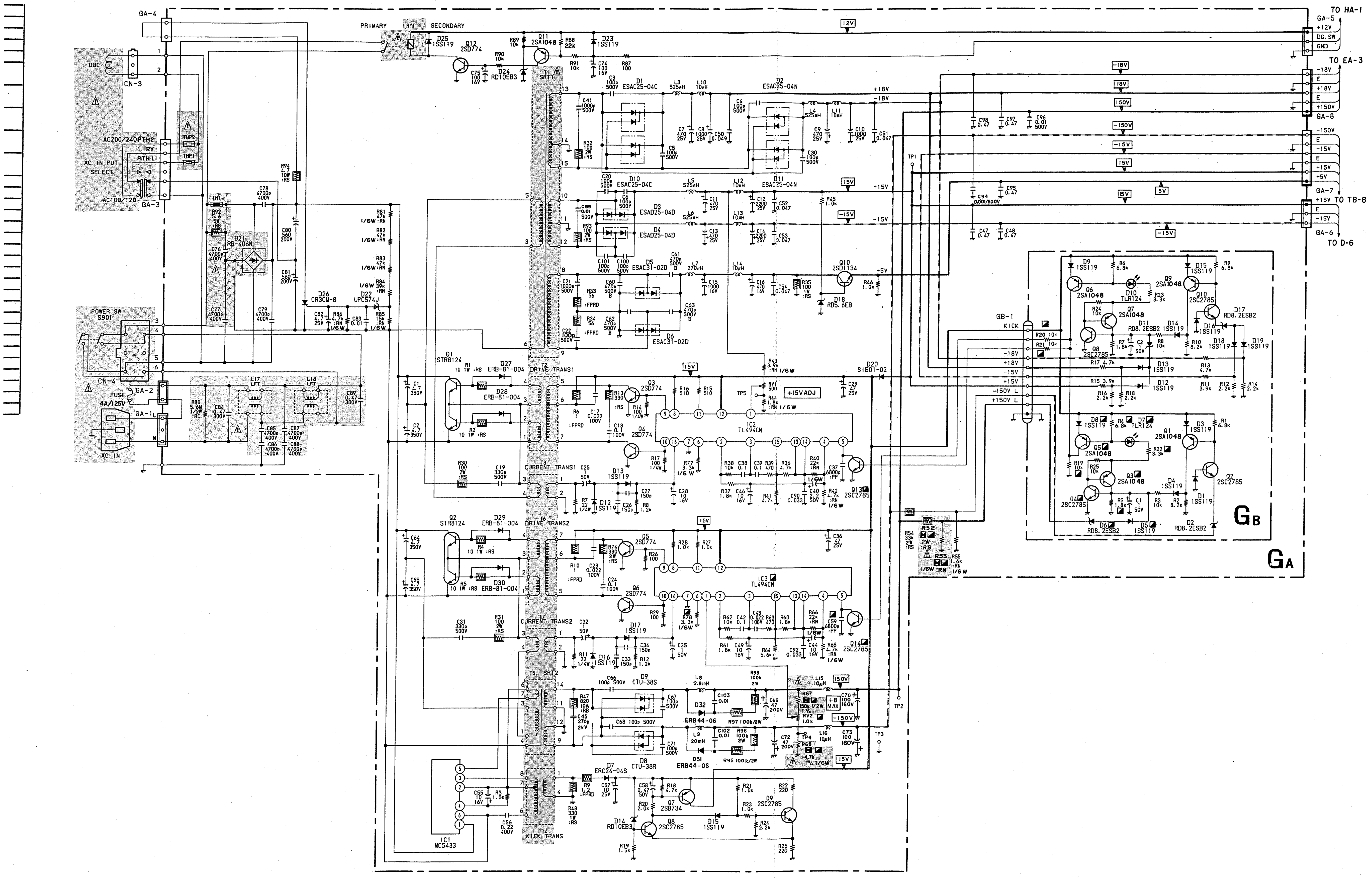
GB BOARD

Q1	2SA1048	O.V.P (-150V)
2	2SC2785	O.V.P (-150V)
3	2SA1048	O.V.P (+150V)
4	2SC2785	O.V.P (+150V)
5	2SA1048	O.V.P (+150V)
6	2SA1048	O.V.P ($^{+15}_{+18}$V)
7	2SA1048	O.V.P ($^{+15}_{+18}$V)
8	2SC2785	O.V.P ($^{+15}_{+18}$V)
9	2SA1048	O.V.P ($^{-15}_{-18}$V)
10	2SC2785	O.V.P ($^{-15}_{-18}$V)
D1	1SS119	PROTECTOR
2	RD8.2ES-T1B2	REFERENCE
3	1SS119	PROTECTOR
4	1SS119	MIX.
5	1SS119	MIX.
6	RD8.2ES-T1B2	REFERENCE
7	TLR124	O.V.P INDICATE
8	1SS119	PROTECTOR
9	1SS119	PROTECTOR
10	TLR124	O.V.P INDICATE
11	RD8.2ES-T1B2	REFERENCE
12	1SS119	MIX.
13	1SS119	MIX.
14	1SS119	MIX.
15	1SS119	PROTECTOR
16	1SS119	PROTECTOR
17	RD8.2ES-T1B2	REFERENCE
18	1SS119	MIX.
19	1SS119	MIX.

GA board (AC RECT, DC REG)
GB board (OVER VOLTAGE PROTECTOR)

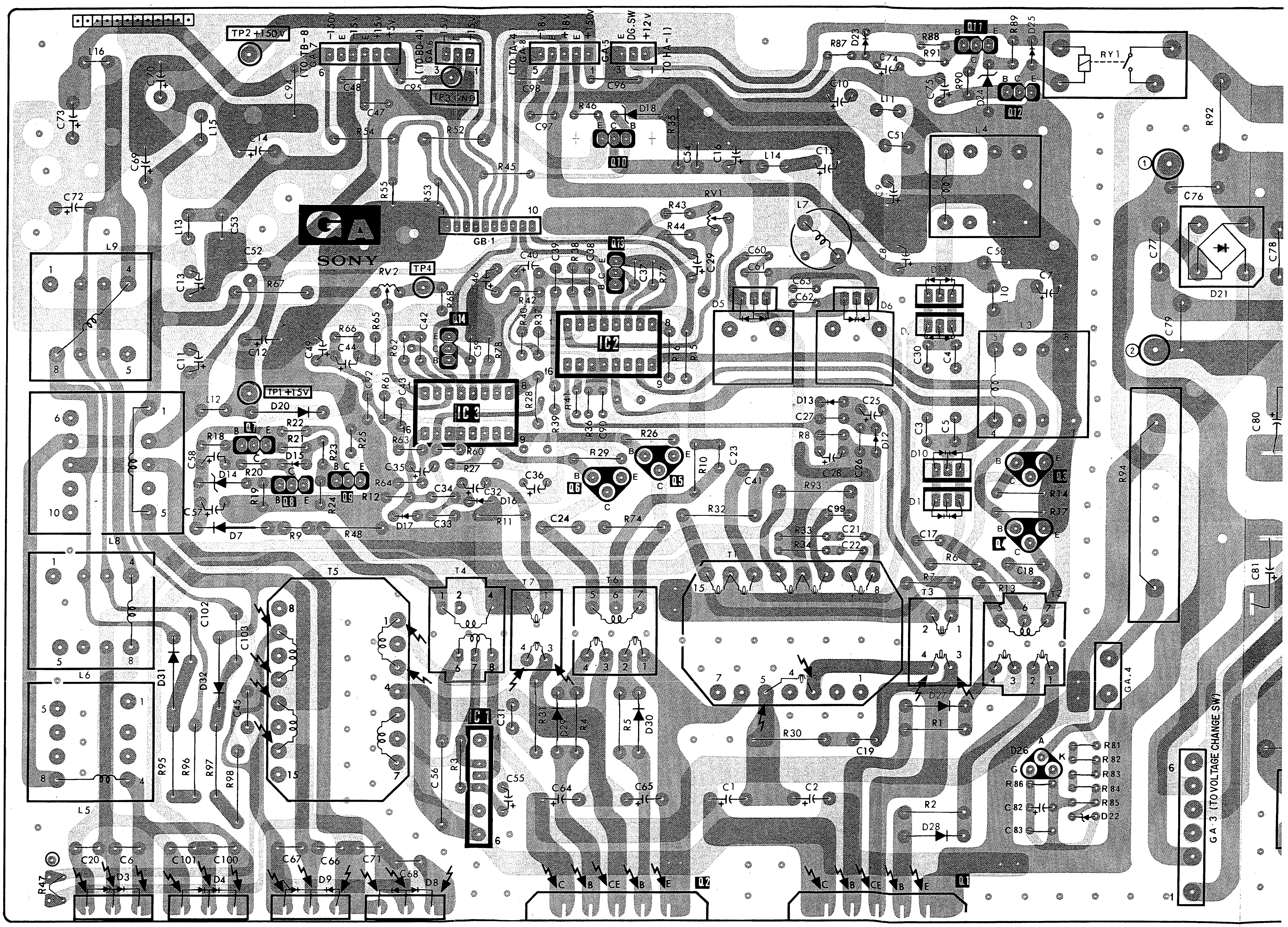

GA-4
PRIMARY
RY1
SECONDARY
12V
DGC
CN-3
AC200/240PTH2
RY
PTH1
AC IN PUT SELECT
AC100/120
GA-3
THP2
THP1
TH1
R92
D21 RB-406N
C76 4700p 400V
C77 4700p 400V
C78 4700p 400V
C79 4700p 400V
C80 560 200V
C81 560 200V
D26 CR3CM-8
D22 UPC574J
POWER SW S901
CN-4
FUSE 4A/125V
GA-2
GA-1
AC IN
L17 LFT
L18 LFT
C84 0.47 300V
C89 0.47 300V
D25 1SS119
Q12 2SD774
Q11 2SA1048
D23 1SS119
D24 RD10EB3
T1 SRT1
D1 ESAC25-04C
D2 ESAC25-04N
D10 ESAC25-04C
D11 ESAC25-04N
D3 ESAD25-04D
D4 ESAD25-04D
D5 ESAC31-02D
D6 ESAC31-02D
15V
-15V
Q10 2SD1134
D18 RD5.6EB
Q1 STR8124
D27 ERB-81-004
D28 ERB-81-004
T2 DRIVE TRANS1
Q3 2SD774
Q4 2SD774
IC2 TL494CN
+15V ADJ
RV1 500
T3 CURRENT TRANS1
D13 1SS119
D12 1SS119
Q2 STR8124
D29 ERB-81-004
D30 ERB-81-004
T6 DRIVE TRANS2
Q5 2SD774
Q6 2SD774
IC3 TL494CN
T7 CURRENT TRANS2
D17 1SS119
D16 1SS119
T5 SRT2
D9 CTU-38S
D8 CTU-38R
D32
D31 ERB44-06
ERB44-06
150V
+B MAX
-150V
RV2
IC1 MC5433
T4 KICK TRANS
D7 ERC24-04S
Q7 2SB734
Q8 2SC2785
Q9 2SC2785
D14 RD10EB3
D15 1SS119

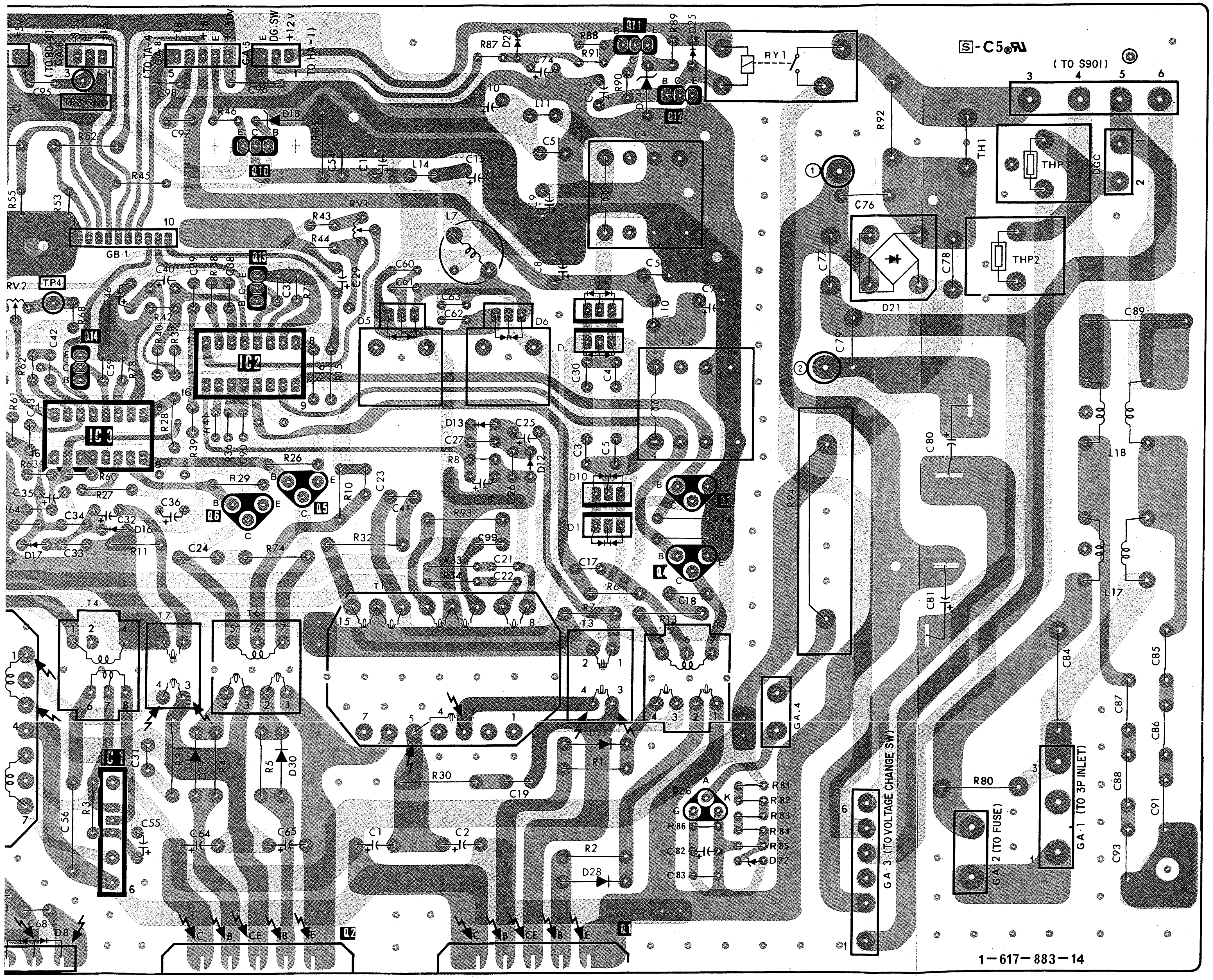
GA board (AC RECT, DC REG)
GB board (OVER VOLTAGE PROTECTOR)


GA-4
DGC
CN-3
AC200/240PTH2
RY
PTH1
AC IN PUT SELECT
AC100/120
GA-3
THP2
THP1
TH1
D21 RB-406N
POWER SW S901
CN-4
FUSE 4A/125V
GA-2
GA-1
AC IN
L17 LFT
L18 LFT
PRIMARY
RY1
SECONDARY
D25 1SS119
Q12 2SD774
Q11 2SA1048
D23 1SS119
D24 RD10EB3
SRT1
D1 ESAC25-04C
D2 ESAC25-04N
D10 ESAC25-04C
D11 ESAC25-04N
D3 ESAD25-04D
D4 ESAD25-04D
D5 ESAC31-02D
D6 ESAC31-02D
Q10 2SD1134
D18 RD5.6EB
D26 CR3CM-8
D22 UPC574J
Q1 STR8124
D27 ERB-81-004
D28 ERB-81-004
T2 DRIVE TRANS1
T3 CURRENT TRANS1
Q3 2SD774
Q4 2SD774
IC2 TL494CN
+15VADJ
RV1
TP5
D20 S1B01-02
Q13 2SC2785
D13 1SS119
D12 1SS119
Q2 STR8124
D29 ERB-81-004
D30 ERB-81-004
T6 DRIVE TRANS2
T7 CURRENT TRANS2
Q5 2SD774
Q6 2SD774
IC3 TL494CN
Q14 2SC2785
D17 1SS119
D16 1SS119
T5 SRT2
D9 CTU-38S
D8 CTU-38R
D32 ERB44-06
D31 ERB44-06
L8 2.9mH
L9 20mH
+B MAX
RV2
TP4
TP2
TP3
IC1 MC5433
D7 ERC24-04S
T4 KICK TRANS
Q7 2SB734
Q8 2SC2785
Q9 2SC2785
D14 RD10EB3
D15 1SS119
TP1
12V
18V
-18V
150V
-150V
-15V
15V
5V
TO HA-1
GA-5
+12V
DG. SW
GND
TO EA-3
-18V
E
+18V
+150V
GA-8
-150V
-15V
+15V
+5V
GA-7
TO TB-8
GA-6
TO D-6
GB-1
KICK
-150V L
+150V L
D9 1SS119
Q6 2SA1048
D10 TLR124
Q9 2SA1048
D15 1SS119
Q10 2SC2785
D17 RD8.2ESB2
Q7 2SA1048
D11 RD8.2ESB2
D14 1SS119
D16 1SS119
Q8 2SC2785
D18 1SS119
D19 1SS119
D13 1SS119
D12 1SS119
D8 1SS119
D7 TLR124
Q1 2SA1048
D3 1SS119
Q5 2SA1048
Q3 2SA1048
Q2 2SC2785
Q4 2SC2785
D4 1SS119
D1 1SS119
D6 RD8.2ESB2
D5 1SS119
D2 RD8.2ESB2
GB
GA

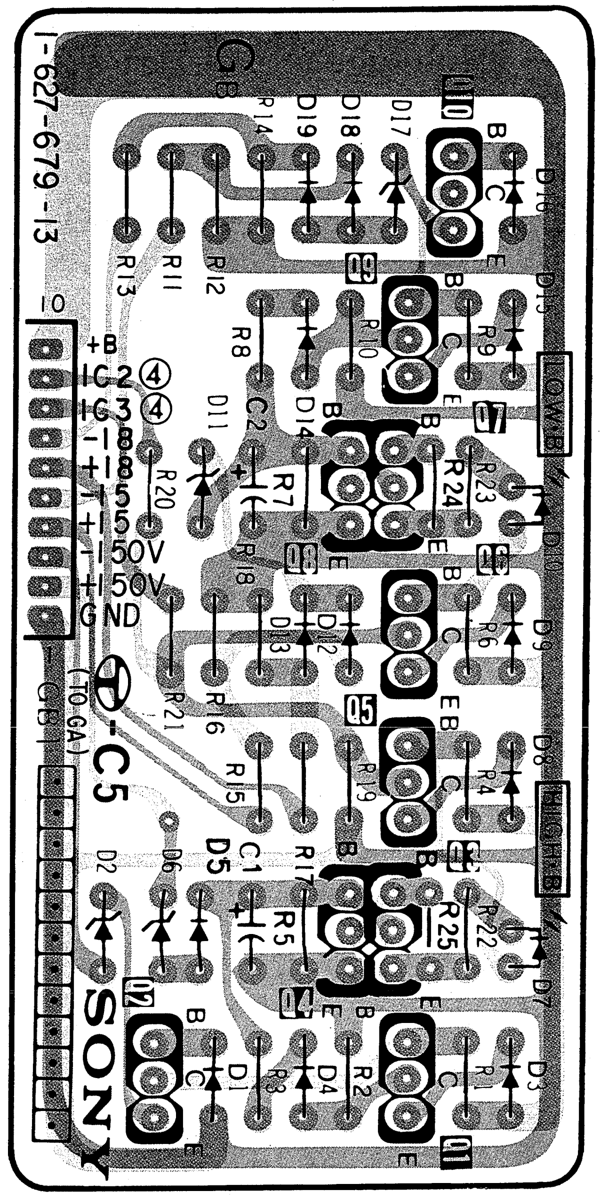
GA board (AC RECT, DC REG)

IC	Q	D	ADJ·TP
		23 25	
	11		TP2
		24	TP3
	12		
		18	
	10		
			RV1
		21	
	13	11	RV2 TP4
		5 6	
		2	
2			
	14		
			TP1
3			
		20 13	
	7		
		12	
	5	15	
	9 6 3	10	
	8	14	
		16	
		1	
		17	
		7	
		31,32	
		29 27	
		30	
		26	
1			
		22	
		28	
		3 4	
	2 1	9 8	


TP2 +150V
(TO TB-8)
GA-7
-150V
+15V
+5V
(TO BD-4)
GA-6
TP3 GND
(TO TA-4)
GA-8
-18V
+18V
+150V
GA-5
DG.SW
+12V
(TO HA-1)
RY1
GA
SONY
GB-1
TP4
RV1
RV2
TP1 +15V
IC1
IC2
IC3
T1
T3
T4
T5
T6
T7
L3
L4
L5
L6
L7
L8
L9
D21
GA-4
GA 3 (TO VOLTAGE CHANGE SW)
Q1
Q2


(TO S901)
3
4
5
6
RY1
TH1
THP
THP2
DGC
D21
C76
C77
C78
C79
C80
C81
C89
L18
L17
R92
R94
L4
L7
L10
L11
L14
IC2
IC3
IC1
GB·1
RV1
RV2
TP4
TP3 GND
T1
T3
T4
T6
T7
Q1
Q2
Q3
Q4
Q5
Q6
Q10
Q11
Q12
Q13
Q14
D26
R80
R81
R82
R83
R84
R85
R86
D22
C82
C83
D28
D27
C84
C85
C86
C87
C88
C91
C93
GA·4
GA·3 (TO VOLTAGE CHANGE SW)
GA·2 (TO FUSE)
GA·1 (TO 3P INLET)
(TO HA-1)
(TO TA-4)
(TO BD-4)
DG.SW
+12V
1-617-883-14

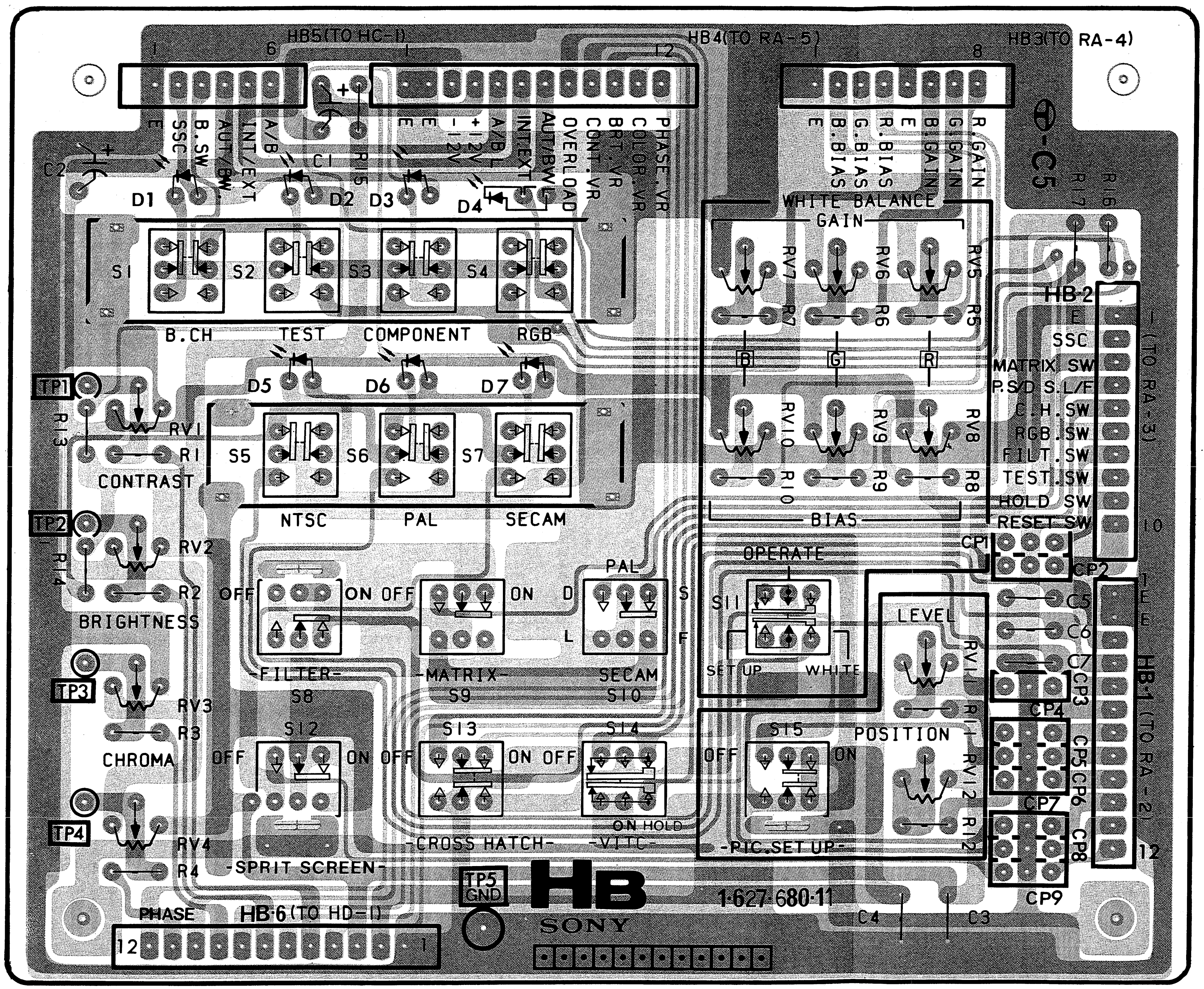
GB board (OVER VOLTAGE PROTECTOR)


1-627-679-13
GB
+B
IC2④
IC3④
-18
+18
-15
+15
-150V
+150V
GND
(TO GA)
GB·1
LOW B
HIGH B
SONY
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D15
D16
D17
D18
D19
C1
C2
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25

- ▨ : Conductor side pattern
- ░ : Component side pattern

5. DIAGRAMS

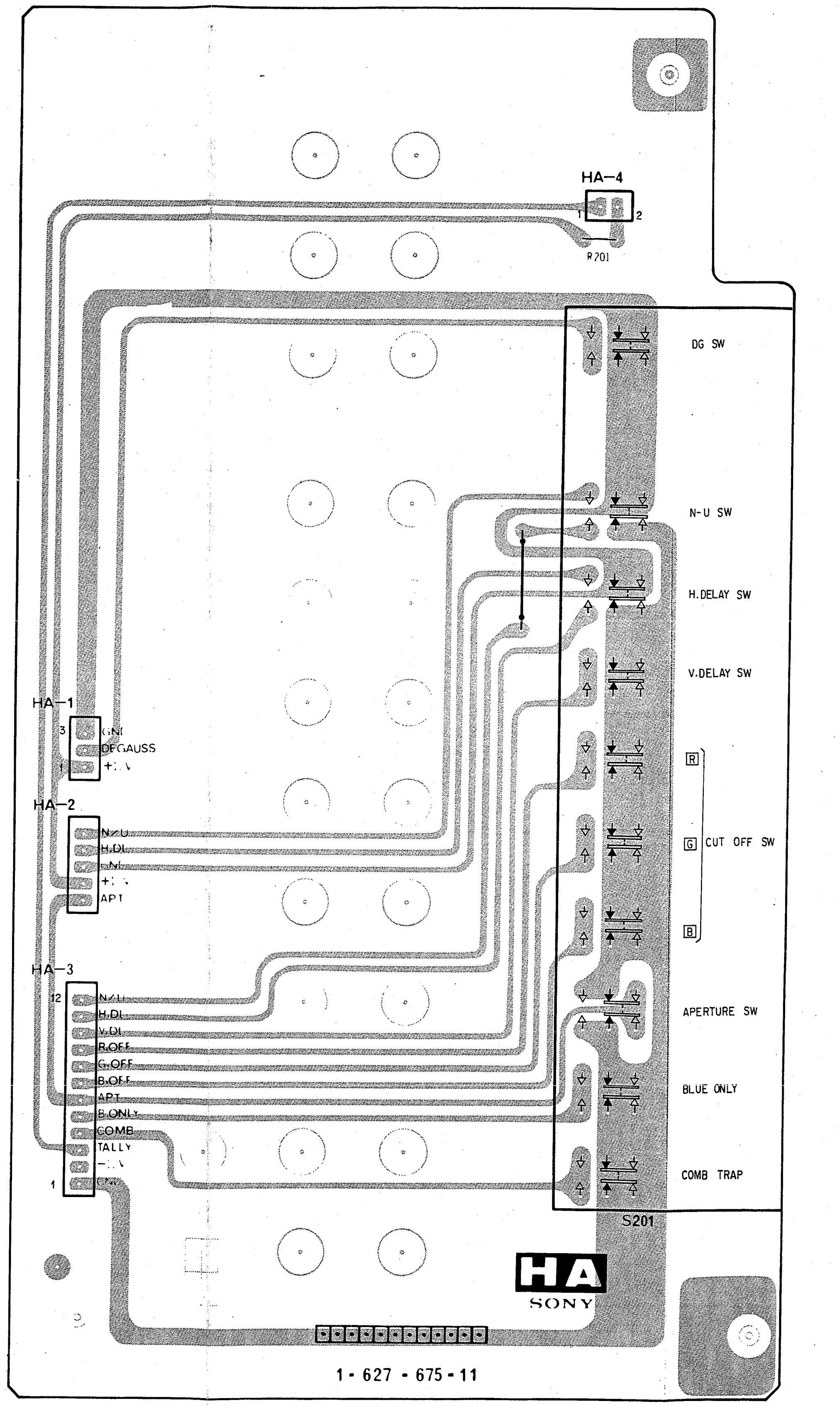
HB board (SYSTEM SWITCH)

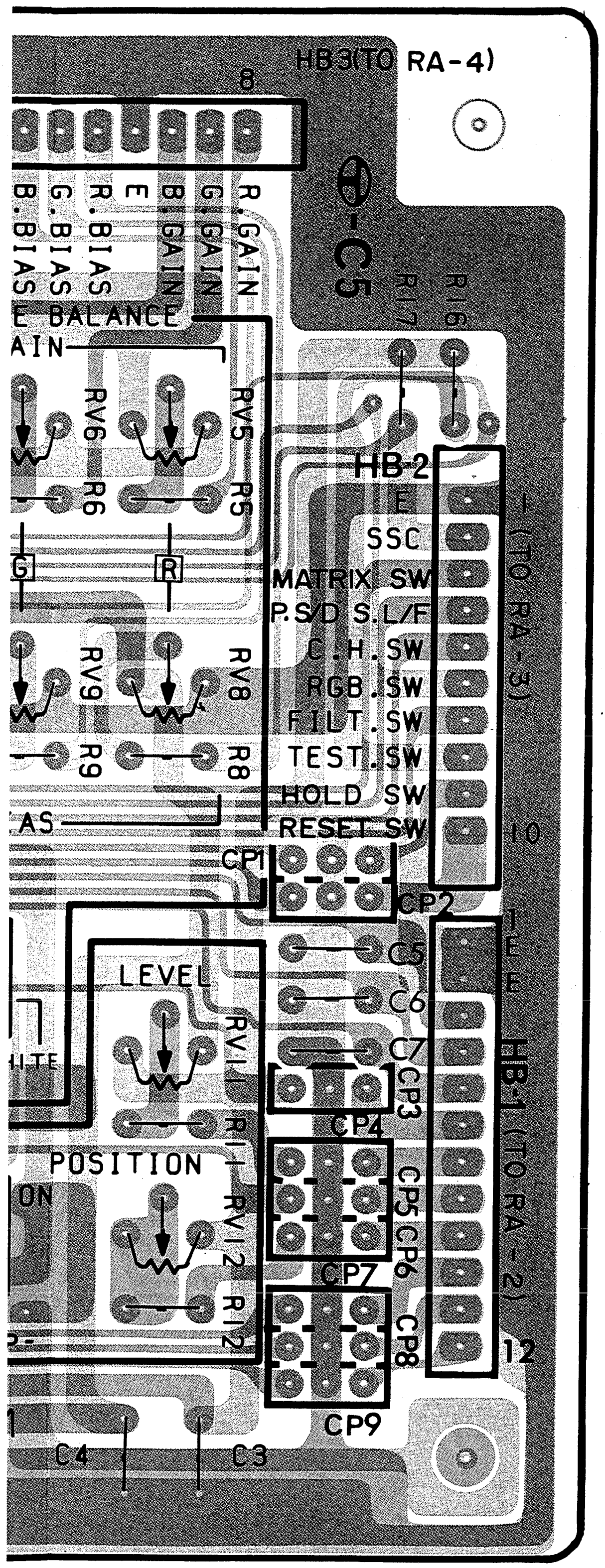

HB5(TO HC-1)
1
6
12
HB4(TO RA-5)
HB3(TO RA-4)
8
E
SSC
B.SW
AUT/BW
INT/EXT
A/B
E
E
+12V
-12V
A/BL
INT.EXT
AUT/BWL
OVERLOAD
CONT.VR
BRT.VR
COLOR.VR
PHASE.VR
E
B.BIAS
G.BIAS
R.BIAS
E
B.GAIN
G.GAIN
R.GAIN
C5
R17
R16
C2
C1
R15
D1
D2
D3
D4
WHITE BALANCE
GAIN
RV7
RV6
RV5
R7
R6
R5
B
G
R
RV10
RV9
RV8
R10
R9
R8
BIAS
S1
S2
S3
S4
B.CH
TEST
COMPONENT
RGB
D5
D6
D7
TP1
R13
RV1
R1
CONTRAST
S5
S6
S7
NTSC
PAL
SECAM
TP2
R14
RV2
R2
BRIGHTNESS
OFF
ON
FILTER
S8
MATRIX
S9
PAL
D
L
S
F
SECAM
S10
HB-2
1 (TO RA-3)
E
SSC
MATRIX SW
P.S/D S.L/F
C.H.SW
RGB.SW
FILT.SW
TEST SW
HOLD SW
RESET SW
10
CP1
CP2
OPERATE
S11
SET UP
WHITE
LEVEL
RV11
R11
C5
C6
C7
CP3
CP4
E
E
HB-1 (TO RA-2)
TP3
RV3
R3
CHROMA
S12
S13
S14
S15
POSITION
RV12
R12
CP5
CP6
CP7
CP8
CP9
12
TP4
RV4
R4
SPRIT SCREEN
CROSS HATCH
VITC
ON HOLD
PIC.SET UP
TP5 GND
HB
SONY
1-627-680-11
C4
C3
PHASE
HB-6 (TO HD-1)
12
1

▨ : Conductor side pattern

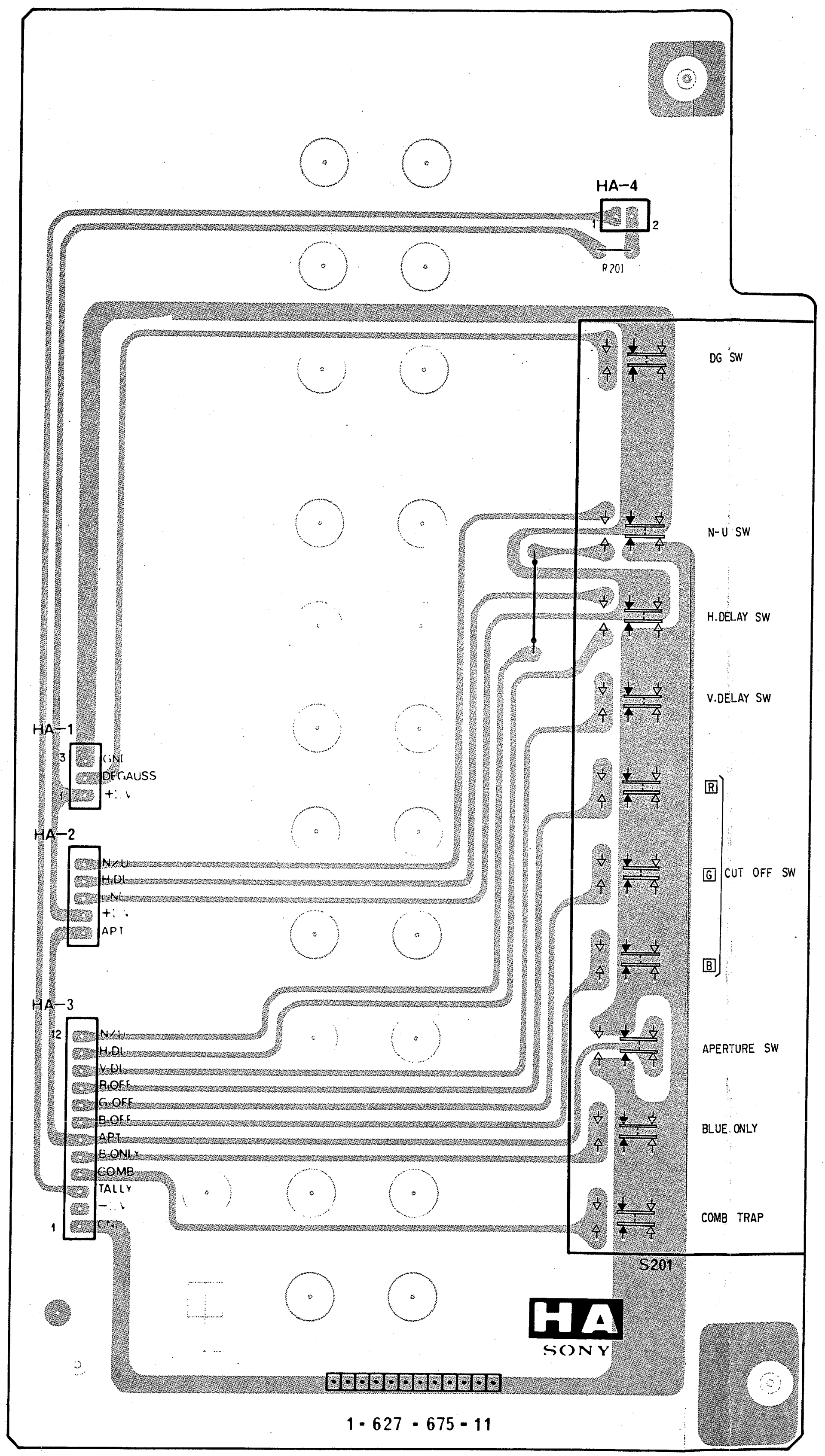
▨ : Component side pattern

HA board (LEFT CONTROL PANEL)


HA-4
1
2
R701
HA-1
3
GND
DEGAUSS
1
HA-2
N-U
H.DL
APT
HA-3
12
N-U
H.DL
V.DL
R.OFF
G.OFF
B.OFF
APT
B.ONLY
COMB
TALLY
1
DG SW
N-U SW
H.DELAY SW
V.DELAY SW
R
G
CUT OFF SW
B
APERTURE SW
BLUE ONLY
COMB TRAP
S201
HA
SONY
1-627-675-11


HB3(TO RA-4)
8
R.GAIN
G.GAIN
B.GAIN
E
R.BIAS
G.BIAS
B.BIAS
E BALANCE
AIN
C5
R17
R16
RV6
RV5
R6
R5
HB-2
E
SSC
MATRIX SW
P.S/D S.L/F
C.H.SW
RGB SW
FILT. SW
TEST SW
HOLD SW
RESET SW
(TO RA-3)
10
RV9
RV8
R9
R8
AS
CP1
CP2
LEVEL
C5
C6
C7
CP3
CP4
RV1
R1
HB-1 (TO RA-2)
POSITION
ON
CP5
CP6
CP7
RV2
R2
CP8
CP9
12
C4
C3

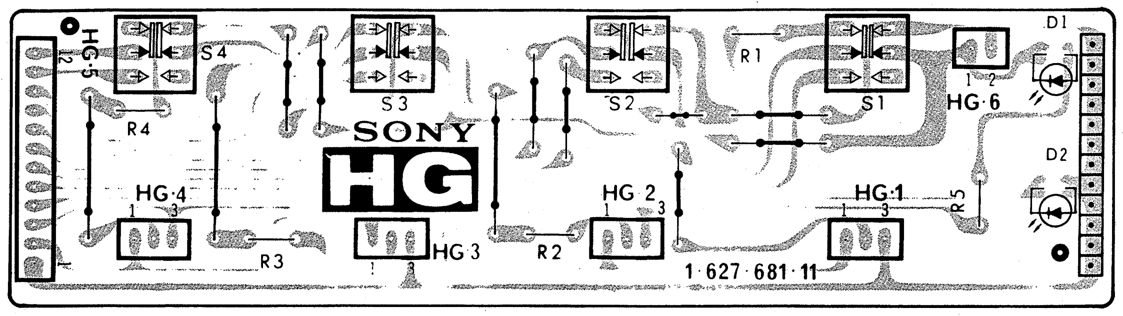
HA board (LEFT CONTROL PANEL)


HA-4
1
2
R201
DG SW
N-U SW
H.DELAY SW
V.DELAY SW
R
G
CUT OFF SW
B
APERTURE SW
BLUE ONLY
COMB TRAP
S201
HA-1
3
GND
DEGAUSS
1
HA-2
N/U
H.DL
GND
AP1
HA-3
12
N/U
H.DL
V.DL
R.OFF
G.OFF
B.OFF
APT
B.ONLY
COMB
TALLY
1
HA
SONY
1-627-675-11

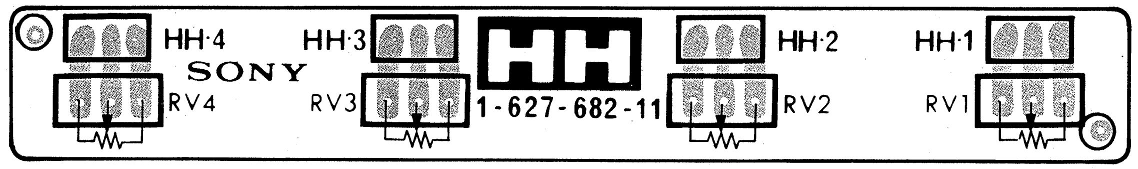
● ▨ : Conductor side pattern

● ░ : Component side pattern

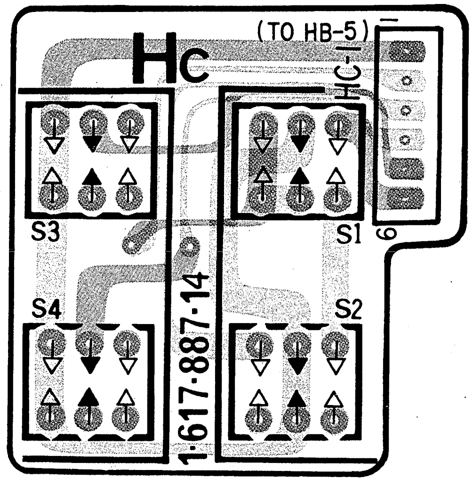
HG board (CONTROL PANEL 2)


HG-5
12
S4
S3
S2
S1
R1
D1
HG-6
R4
SONY
HG
D2
HG-4
HG 2
HG-1
R5
R3
HG-3
R2
1-627-681-11

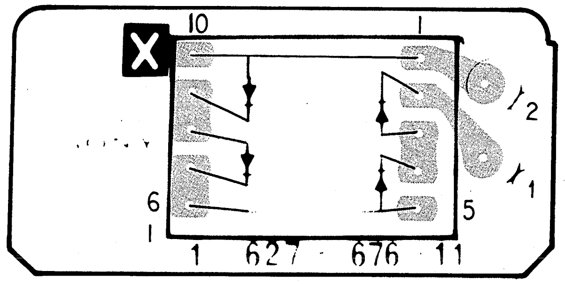
HH board (CONTROL PANEL 1)


HH-4
HH-3
HH
HH-2
HH-1
SONY
RV4
RV3
1-627-682-11
RV2
RV1

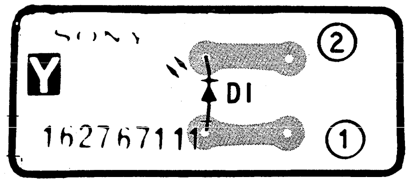
HC board (INPUT SELECT)


Hc
(TO HB-5)
HC-1
S3
S1
6
S4
S2
1-617-887-14

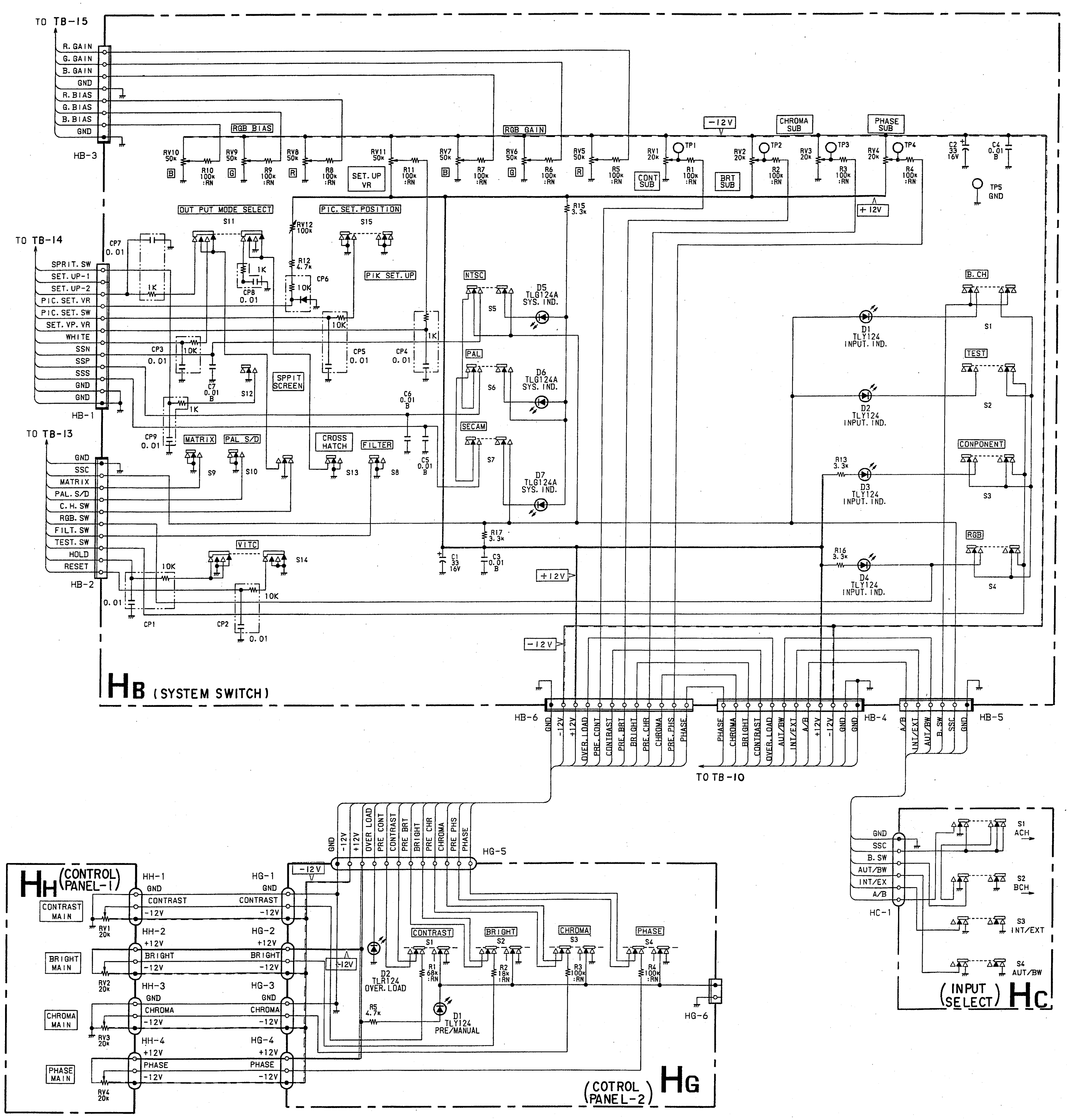
X board (TALLY)

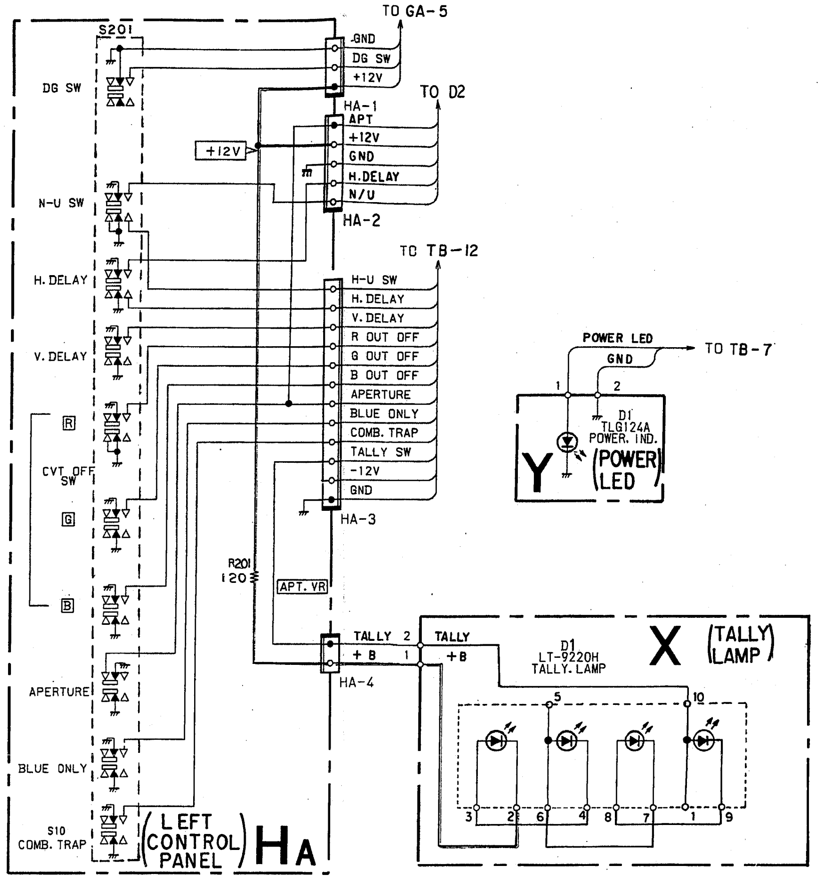

X
10
1
Y2
Y1
6
5
1-627-676-11

Y board (POWER LED)


SONY
Y
D1
②
①
1627671-11

HA board (LEFT CONTROL PANEL), HB BOARD (SYSTEM SWITCH), HC board (INPUT SELECT)
HD board (MANUAL CONTROL), X board (TALLY), Y board (POWER LED)


TO TB-15
R. GAIN
G. GAIN
B. GAIN
GND
R. BIAS
G. BIAS
B. BIAS
GND
HB-3
RGB BIAS
RGB GAIN
-12V
CHROMA SUB
PHASE SUB
SET. UP VR
CONT SUB
BRT SUB
TP1
TP2
TP3
TP4
TP5 GND
+12V
TO TB-14
SPRIT. SW
SET. UP-1
SET. UP-2
PIC. SET. VR
PIC. SET. SW
SET. VP. VR
WHITE
SSN
SSP
SSS
GND
GND
HB-1
OUT PUT MODE SELECT
PIC. SET. POSITION
PIK SET. UP
SPPIT SCREEN
TO TB-13
GND
SSC
MATRIX
PAL. S/D
C. H. SW
RGB. SW
FILT. SW
TEST. SW
HOLD
RESET
HB-2
MATRIX
PAL S/D
CROSS HATCH
FILTER
VITC
NTSC
PAL
SECAM
D5 TLG124A SYS. IND.
D6 TLG124A SYS. IND.
D7 TLG124A SYS. IND.
D1 TLY124 INPUT. IND.
D2 TLY124 INPUT. IND.
D3 TLY124 INPUT. IND.
D4 TLY124 INPUT. IND.
B. CH
TEST
CONPONENT
RGB
HB (SYSTEM SWITCH)
HB-6
HB-4
HB-5
TO TB-10
HH (CONTROL PANEL-1)
CONTRAST MAIN
BRIGHT MAIN
CHROMA MAIN
PHASE MAIN
HH-1
HH-2
HH-3
HH-4
HG-1
HG-2
HG-3
HG-4
HG-5
HG-6
CONTRAST
BRIGHT
CHROMA
PHASE
D2 TLR124 OVER. LOAD
D1 TLY124 PRE/MANUAL
(COTROL PANEL-2) HG
HC-1
S1 ACH
S2 BCH
S3 INT/EXT
S4 AUT/BW
(INPUT SELECT) HC


TO GA-5
S201
GND
DG SW
+12V
TO D2
HA-1
APT
+12V
GND
H. DELAY
N/U
HA-2
TO TB-12
H-U SW
H. DELAY
V. DELAY
R OUT OFF
G OUT OFF
B OUT OFF
APERTURE
BLUE ONLY
COMB. TRAP
TALLY SW
-12V
GND
HA-3
DG SW
N-U SW
H. DELAY
V. DELAY
CVT OFF SW
APERTURE
BLUE ONLY
S10 COMB. TRAP
R201 120
APT. VR
TALLY
+B
HA-4
(LEFT CONTROL PANEL) HA
POWER LED
GND
TO TB-7
D1 TLG124A POWER. IND.
Y (POWER LED)
D1 LT-9220H TALLY. LAMP
X (TALLY LAMP)

HB BOARD

D1	TLY124	INPUT MODE INDICATOR
2	TLY124	INPUT MODE INDICATOR
3	TLY124	INPUT MODE INDICATOR
4	TLY124	INPUT MODE INDICATOR
5	TLG124A	SYSTEM INDICATOR
6	TLG124A	SYSTEM INDICATOR
7	TLG124A	SYSTEM INDICATOR

HG BOARD

D1	TLY124	PRE/MANUAL INDICATOR
2	TLR124	OVER LOAD INDICATOR

X BOARD

D1	LT-9220H	TALLY LAMP

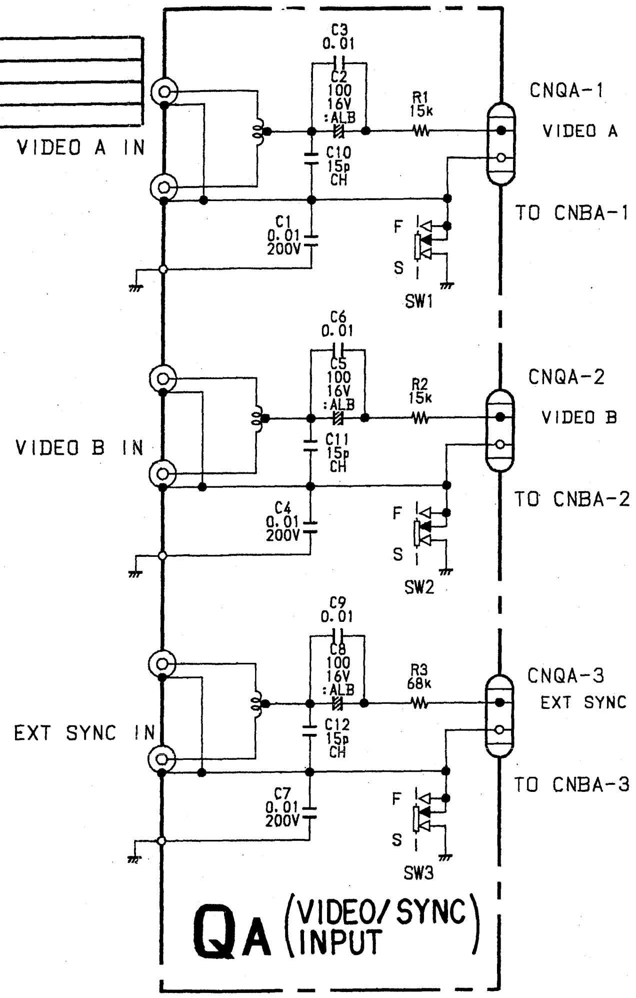
Y BOARD

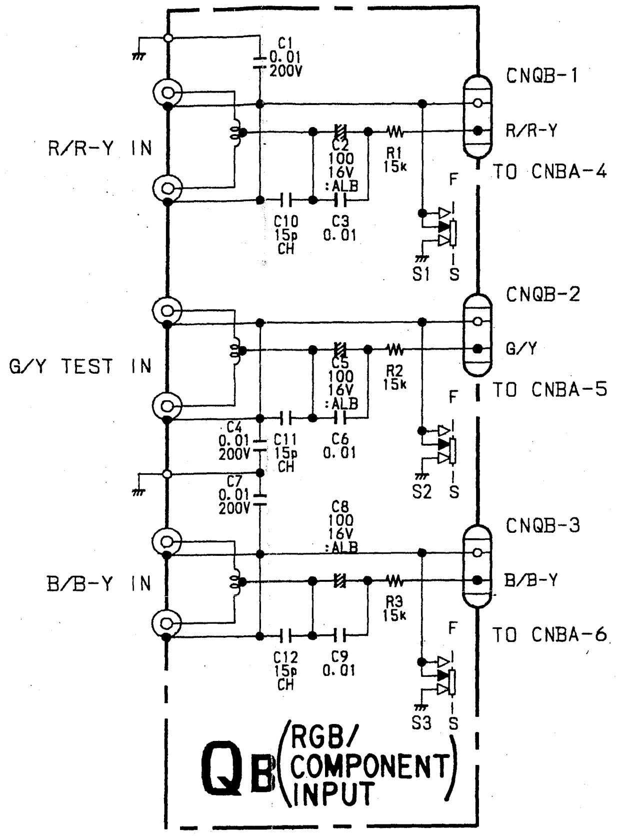
D1	TLG124A	POWER INDICATOR

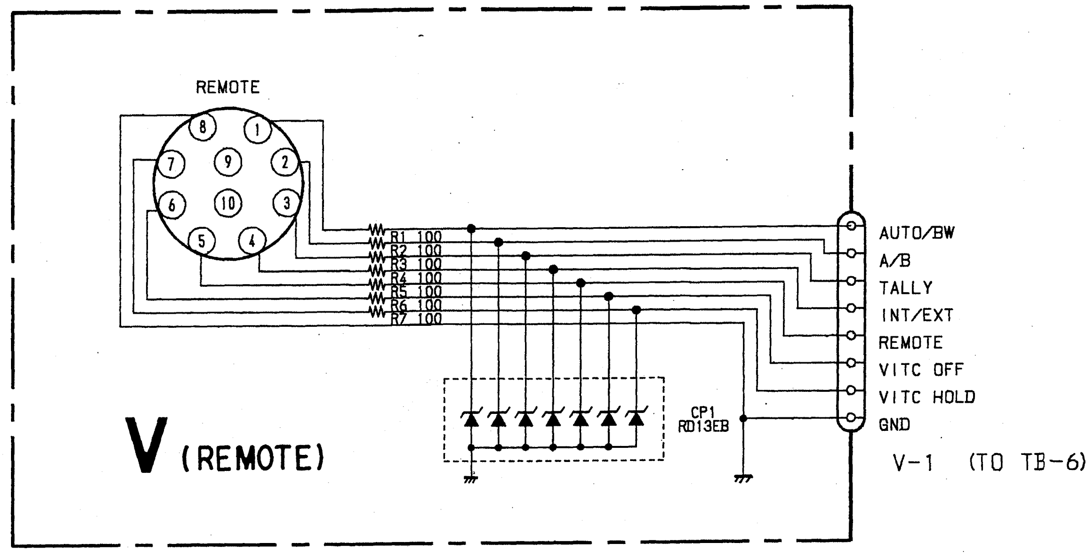
GC board (REG) QA board (COMPOSITE VIDEO INPUT) QB board (RGB/COMPONENT INPUT) V board (REMOTE) W board (RGB/COMPONENT & VECTOR)

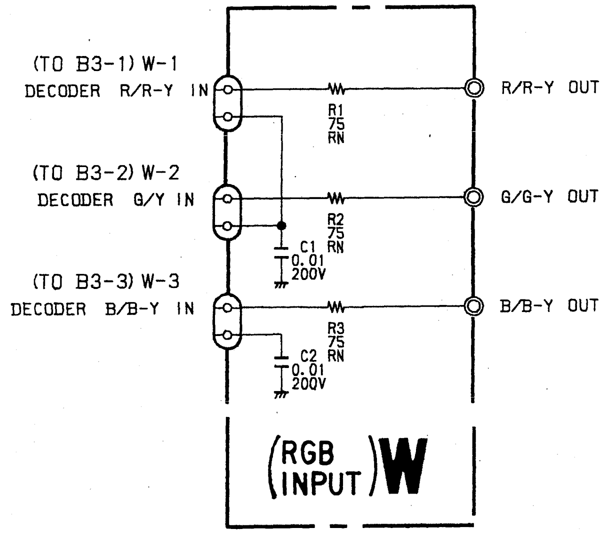
GC BOARD

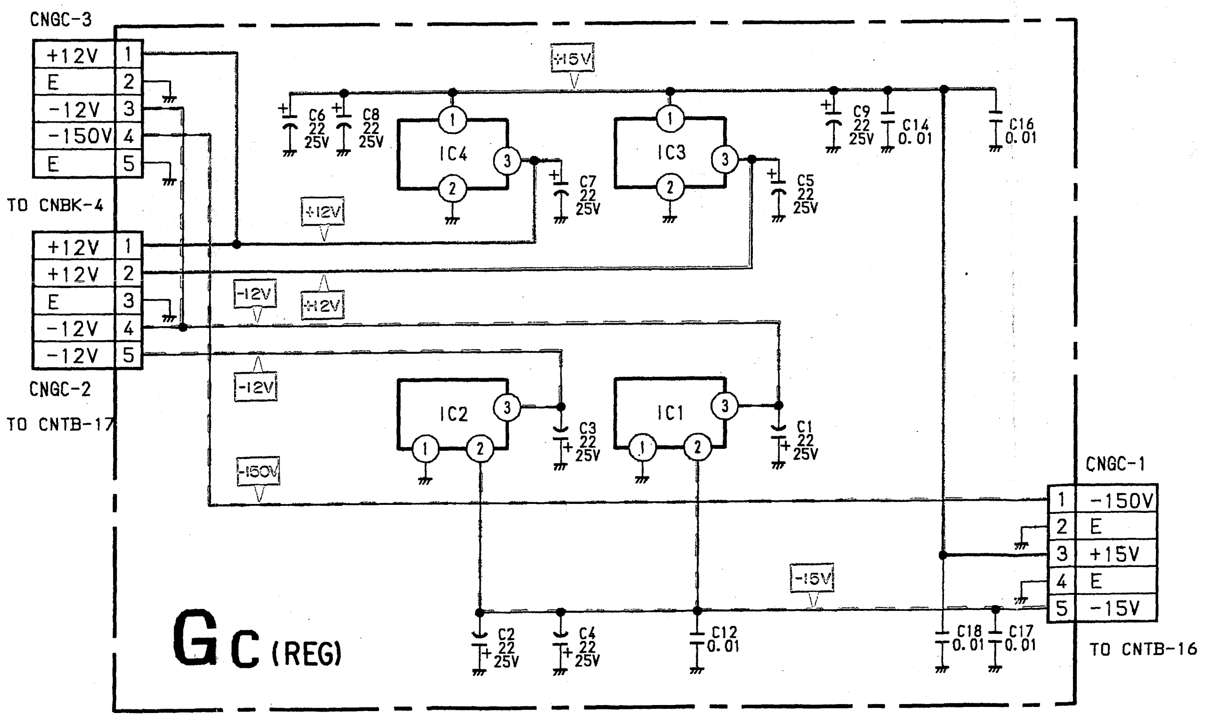
IC1	uPC7912H	-12V REG
2	uPC7912H	-12V REG
3	uPC7812H	+12V REG
4	uPC7812H	+12V REG


VIDEO A IN
C3 0.01
C2 100 16V :ALB
R1 15k
C10 15p CH
C1 0.01 200V
CNQA-1
VIDEO A
TO CNBA-1
F
S
SW1
VIDEO B IN
C6 0.01
C5 100 16V :ALB
R2 15k
C11 15p CH
C4 0.01 200V
CNQA-2
VIDEO B
TO CNBA-2
SW2
EXT SYNC IN
C9 0.01
C8 100 16V :ALB
R3 68k
C12 15p CH
C7 0.01 200V
CNQA-3
EXT SYNC
TO CNBA-3
SW3
QA (VIDEO/SYNC INPUT)

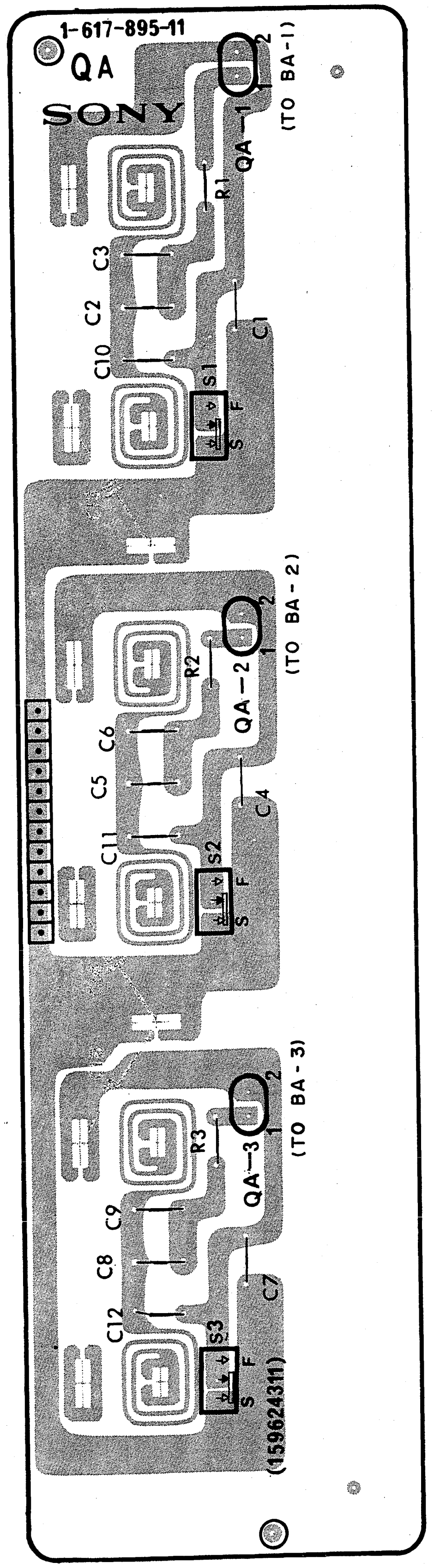

R/R-Y IN
C1 0.01 200V
C2 100 16V :ALB
R1 15k
C10 15p CH
C3 0.01
CNQB-1
R/R-Y
TO CNBA-4
F
S1 S
G/Y TEST IN
C5 100 16V :ALB
R2 15k
C4 0.01 200V
C11 15p CH
C6 0.01
C7 0.01 200V
CNQB-2
G/Y
TO CNBA-5
S2 S
B/B-Y IN
C8 100 16V :ALB
R3 15k
C12 15p CH
C9 0.01
CNQB-3
B/B-Y
TO CNBA-6
S3 S
QB (RGB/ COMPONENT INPUT)


REMOTE
1
2
3
4
5
6
7
8
9
10
R1 100
R2 100
R3 100
R4 100
R5 100
R6 100
R7 100
CP1 RD13EB
AUTO/BW
A/B
TALLY
INT/EXT
REMOTE
VITC OFF
VITC HOLD
GND
V-1 (TO TB-6)
V (REMOTE)

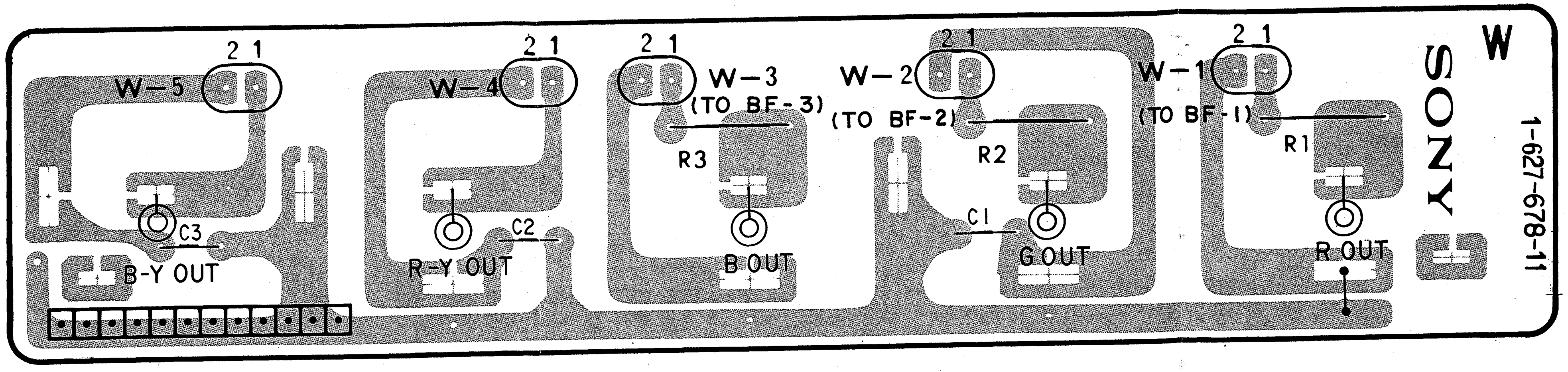

(TO B3-1) W-1
DECODER R/R-Y IN
R1 75 RN
R/R-Y OUT
(TO B3-2) W-2
DECODER G/Y IN
R2 75 RN
C1 0.01 200V
G/G-Y OUT
(TO B3-3) W-3
DECODER B/B-Y IN
R3 75 RN
C2 0.01 200V
B/B-Y OUT
(RGB INPUT) W


CNGC-3
+12V 1
E 2
-12V 3
-150V 4
E 5
TO CNBK-4
+12V 1
+12V 2
E 3
-12V 4
-12V 5
CNGC-2
TO CNTB-17
+15V
C6 22 25V
C8 22 25V
IC4
C7 22 25V
IC3
C5 22 25V
C9 22 25V
C14 0.01
C16 0.01
+12V
-12V
+12V
-12V
-150V
IC2
C3 22 25V
IC1
C1 22 25V
-15V
C2 22 25V
C4 22 25V
C12 0.01
C18 0.01
C17 0.01
CNGC-1
1 -150V
2 E
3 +15V
4 E
5 -15V
TO CNTB-16
GC (REG)

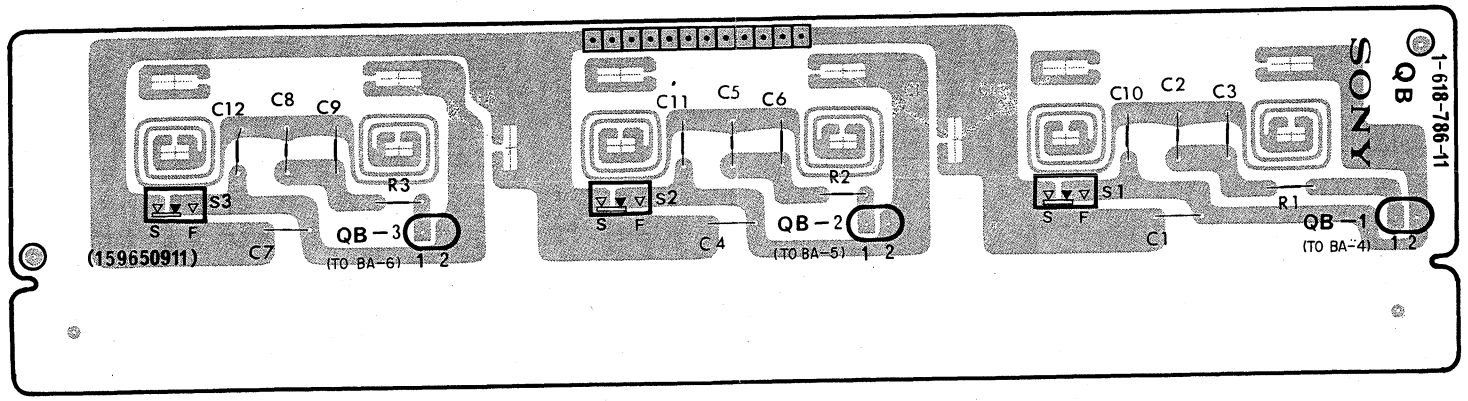
QA board (COMPOSITE VIDEO INPUT)


1-617-895-11
QA
SONY
QA-1
(TO BA-1)
QA-2
(TO BA-2)
QA-3
(TO BA-3)
R1
R2
R3
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
S1
S2
S3
S F
(15962431I)

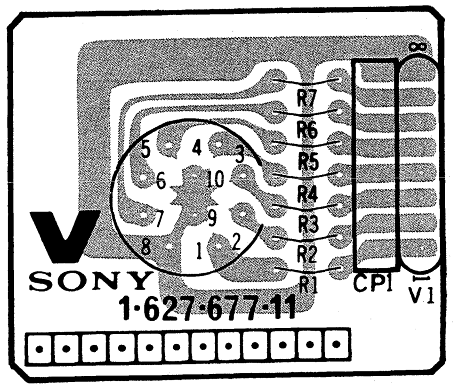
W board (RGB/COMPONENT & VECTOR)


W
SONY
1-627-678-11
W-5
W-4
W-3
(TO BF-3)
W-2
(TO BF-2)
W-1
(TO BF-1)
2 1
R1
R2
R3
C1
C2
C3
B-Y OUT
R-Y OUT
B OUT
G OUT
R OUT

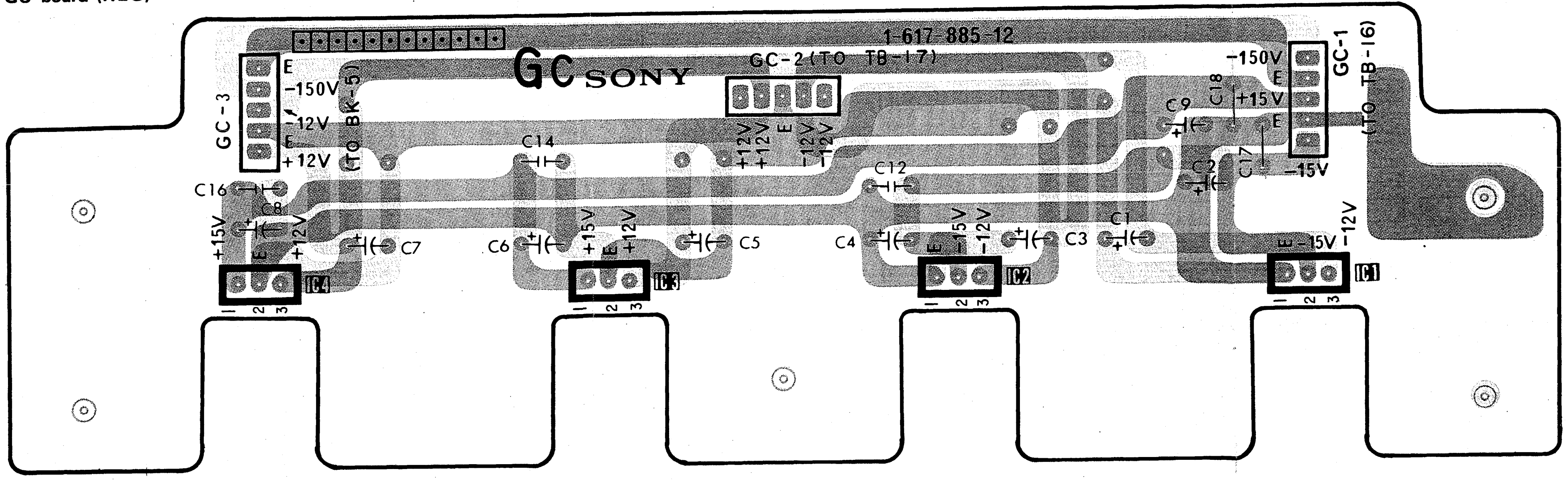
QB board (RGB/COMPONENT INPUT)


SONY
QB
1-618-786-11
QB-1
(TO BA-4)
QB-2
(TO BA-5)
QB-3
(TO BA-6)
1 2
S1
S2
S3
S F
R1
R2
R3
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
(159650911)

V board (REMOTE)


V
SONY
1·627·677·11
R1
R2
R3
R4
R5
R6
R7
CP1
V1
1
2
3
4
5
6
7
8
9
10

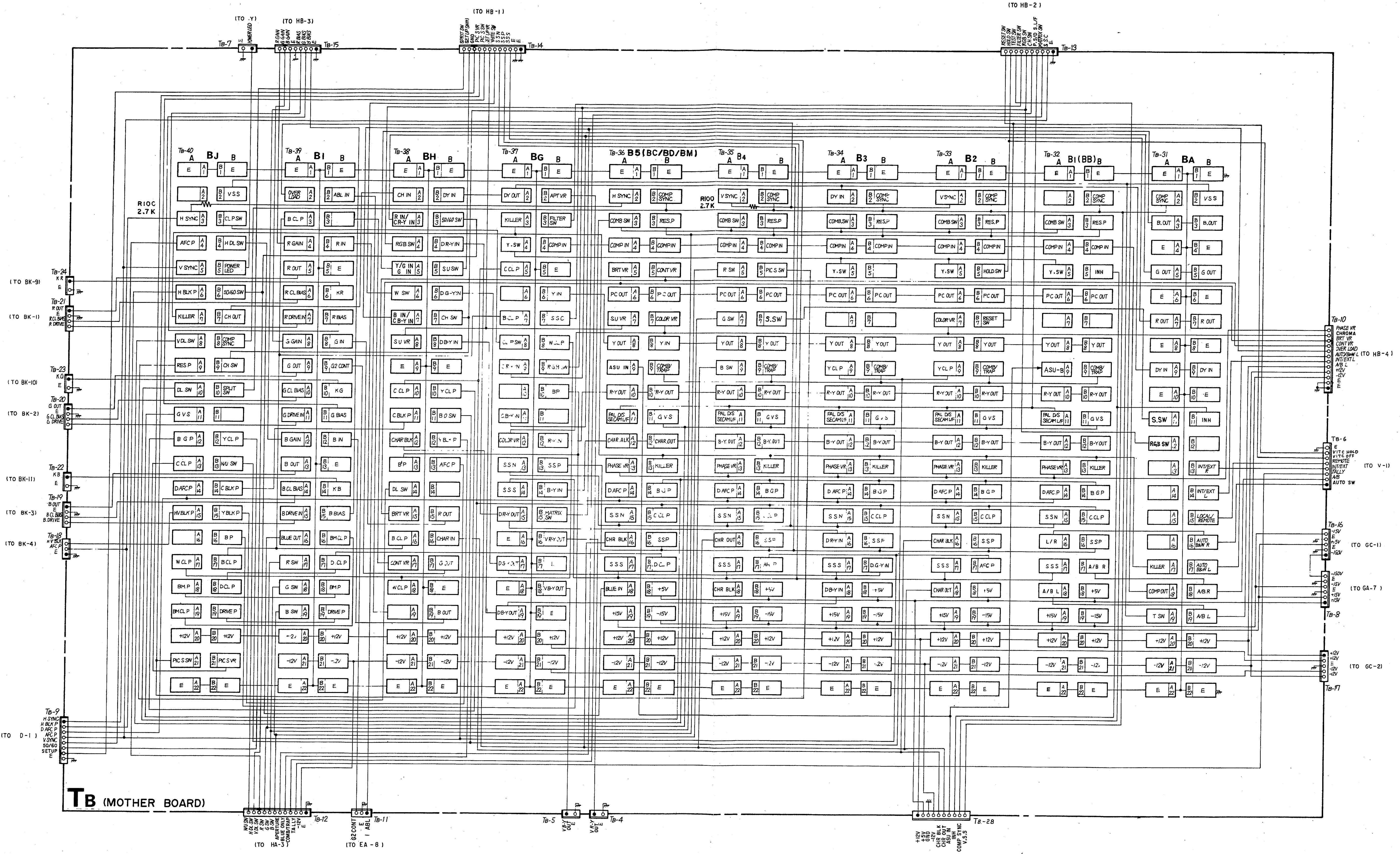
GC board (REG)


GC
SONY
1-617-885-12
GC-1
(TO TB-16)
GC-2 (TO TB-17)
GC-3
(TO BK-5)
E
-150V
-12V
+12V
+15V
-15V
IC1
IC2
IC3
IC4
1 2 3
C1
C2
C3
C4
C5
C6
C7
C8
C9
C12
C14
C16
C17
C18

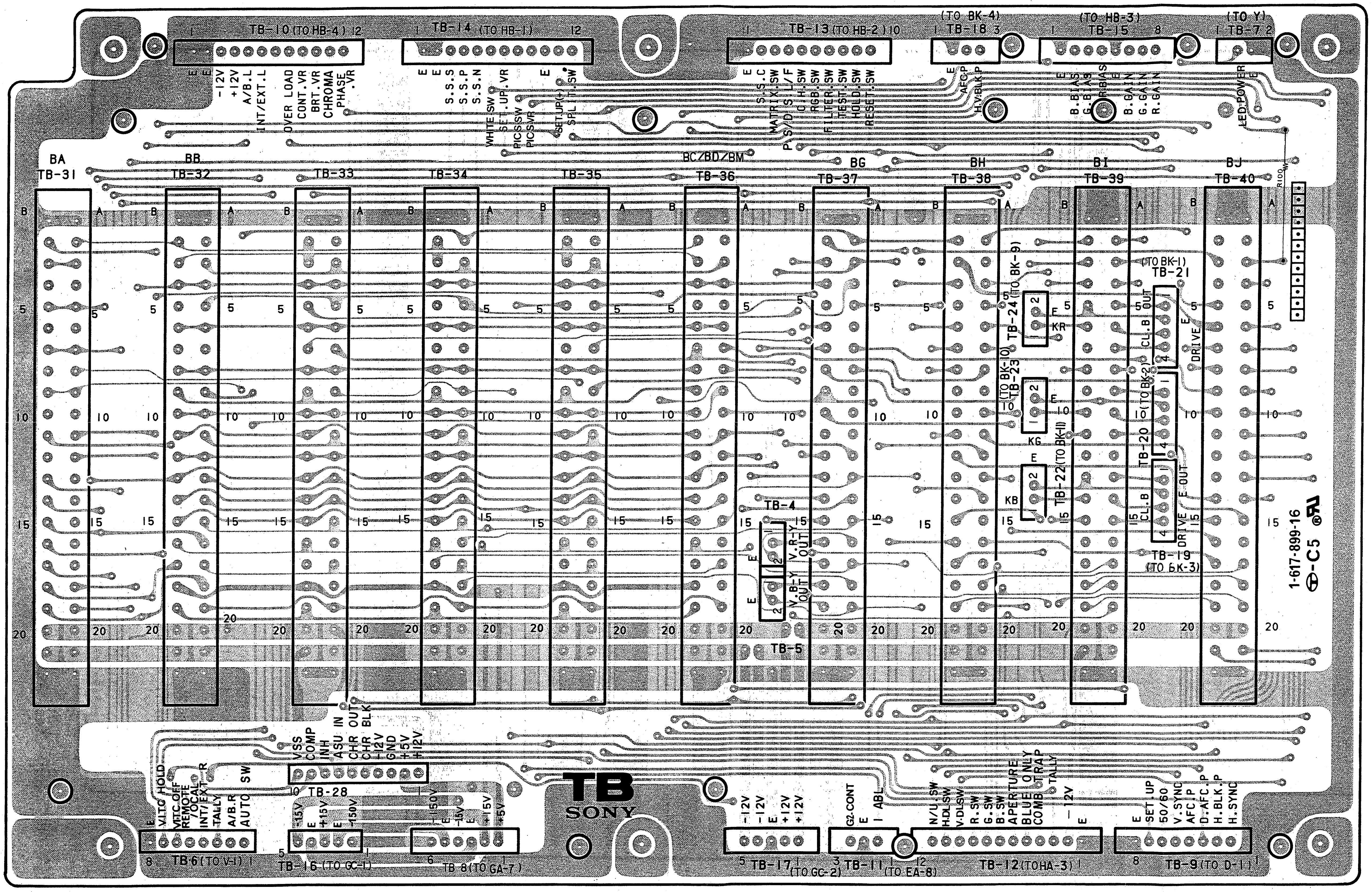
● ▨ : Conductor side pattern

● ░ : Component side pattern

TB board (MOTHER BOARD)


TB (MOTHER BOARD)
(TO Y)
Tb-7
POWER LED
(TO HB-3)
Tb-15
R GAIN
G GAIN
B GAIN
E
R BIAS
G BIAS
B BIAS
(TO HB-1)
Tb-14
(TO HB-2)
Tb-13
Tb-40 BJ
Tb-39 BI
Tb-38 BH
Tb-37 BG
Tb-36 B5 (BC/BD/BM)
Tb-35 B4
Tb-34 B3
Tb-33 B2
Tb-32 B1 (BB)
Tb-31 BA
R10C 2.7K
R100 2.7K
Tb-24 (TO BK-9)
KR
E
Tb-21 (TO BK-1)
R OUT
E
R CL BIAS
R DRIVE
Tb-23 (TO BK-10)
KG
E
Tb-20 (TO BK-2)
G OUT
E
G CL BIAS
G DRIVE
Tb-22 (TO BK-11)
KB
E
Tb-19 (TO BK-3)
B OUT
E
B CL BIAS
B DRIVE
Tb-18 (TO BK-4)
H V BLK P
AFC P
E
Tb-9 (TO D-1)
H SYNC
H BLK P
D AFC P
AFC P
V SYNC
50/60
SETUP
E
Tb-10 (TO HB-4)
PHASE VR
CHROMA
BRT VR
CONT VR
OVER LOAD
AUTO/B&W L
INT/EXT L
A/B L
+12V
-12V
E
E
Tb-6 (TO V-1)
E
V ITC HOLD
V ITC OFF
REMOTE
INT/EXT
TALLY
A/B
AUTO SW
Tb-16 (TO GC-1)
-15V
E
+15V
E
-150V
Tb-8 (TO GA-7)
-150V
E
-15V
E
+15V
+15V
Tb-17 (TO GC-2)
+12V
+12V
E
E
-12V
-12V
Tb-12 (TO HA-3)
N/U SW
H/V DL SW
V DL SW
R SW
G SW
B SW
APERTURE
BLUE ONLY
COMB/TRAP
TALLY
+12V
E
Tb-11 (TO EA-8)
G2 CONT
E
I ABL
Tb-5
V B-Y OUT
E
Tb-4
V R-Y OUT
E
Tb-28
+12V
+5V
GND
-12V
CHR BLK
ASU IN
CHR OUT
INH
COMP SYNC
V S S

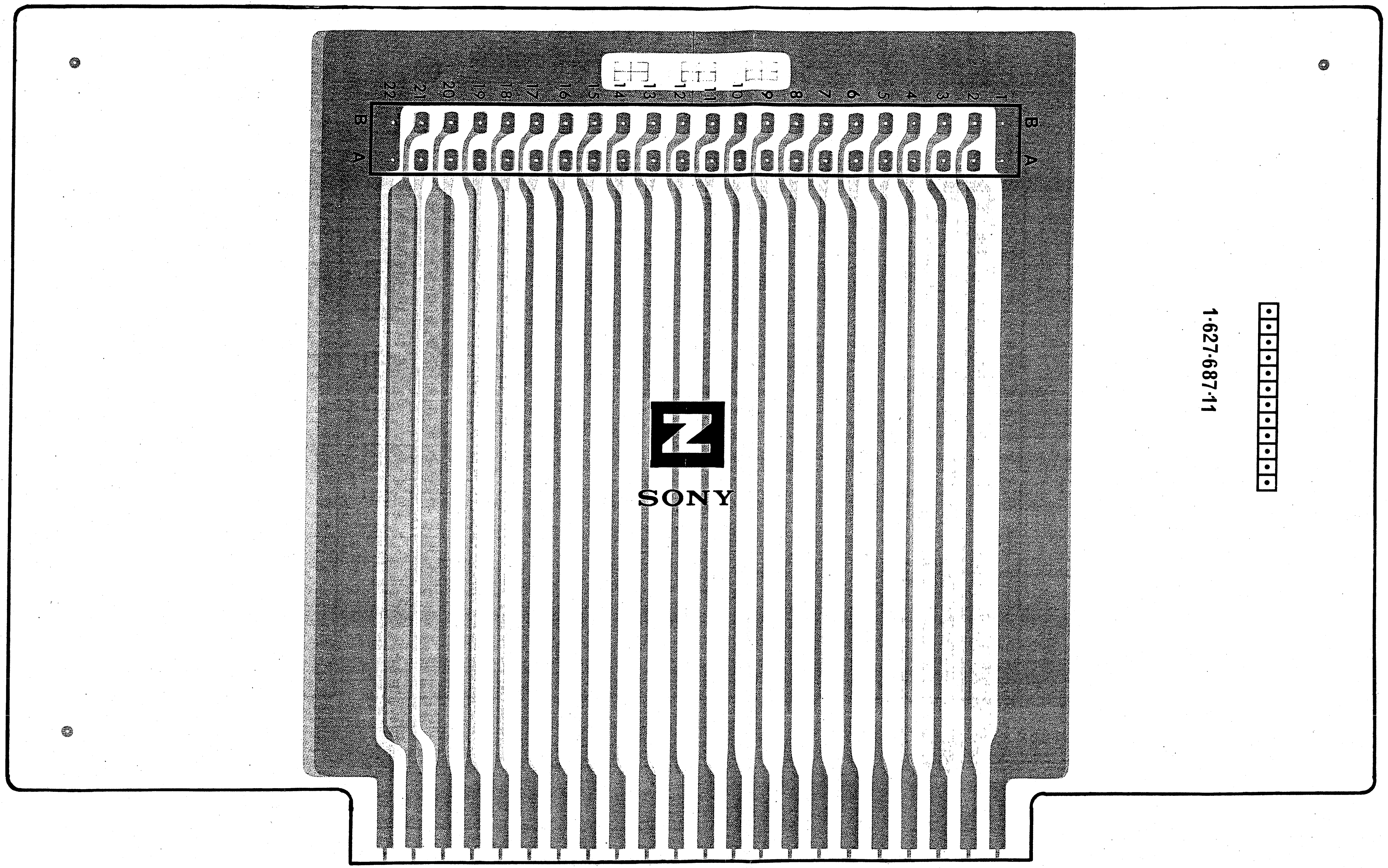
TB board (MOTHER BOARD)


TB-10 (TO HB-4)
TB-14 (TO HB-1)
TB-13 (TO HB-2)
(TO BK-4) TB-18
(TO HB-3) TB-15
(TO Y) TB-7
-12V
+12V
A/B.L
INT/EXT.L
OVER LOAD
CONT.VR
BRT.VR
CHROMA
PHASE
.VR
S.S.S
S.S.P
S.S.N
WHITE SW
SET.UP.VR
PICSSW
PICSWR
SET.UP(+)
SPLIT.SW
S.S.C
MATRIX SW
P/S/D.SL/F
C.H.SW
RGB.SW
FILTER.SW
TEST.SW
HOLD.SW
RESET.SW
AFC.P
H.V.BLK.P
B.BIAS
G.BIAS
R.BIAS
B.GAIN
G.GAIN
R.GAIN
LED POWER
BA
TB-31
BB
TB-32
TB-33
TB-34
TB-35
BC/BD/BM
TB-36
BG
TB-37
BH
TB-38
BI
TB-39
BJ
TB-40
(TO BK-9) TB-24
KR
(TO BK-10) TB-23
KG
TB-22 (TO BK-11)
KB
(TO BK-1) TB-21
CL.B OUT
DRIVE
(TO BK-2) TB-20
E-OUT
CL.B
TB-19 (TO BK-3)
TB-4
V.R-Y OUT
V.B-Y OUT
TB-5
1-617-899-16
-C5
VSS
COMP
INH
ASU
CHR
CHR
IN
OUT
BLK
+12V
GND
+5V
+12V
SW
TB-28
V.LTC HOLD
VITC OFF
REMOTE/LOCAL
INT/EXT R
TALLY
A/B.R
AUTO
-15V
+15V
-150V
+150V
-15V
+15V
+5V
TB
SONY
-12V
-12V
+12V
+12V
G2 CONT
ABL
N/U.SW
H.DLSW
V.DLSW
R.SW
G.SW
B.SW
APERTURE
BLUE ONLY
COMB TRAP
TALLY
-12V
SET UP
50/60
V.SYNC
AFC.P
D.AFC.P
H.BLK.P
H.SYNC
TB6 (TO V-1)
TB-16 (TO GC-1)
TB 8 (TO GA-7)
TB-17 (TO GC-2)
TB-11 (TO EA-8)
TB-12 (TO HA-3)
TB-9 (TO D-1)

▨ : Conductor side pattern

☐ : Component side pattern

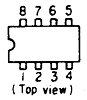
Z board (EXTENSION BOARD)


22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
B
A
B
A
Z
SONY
1-627-687-11

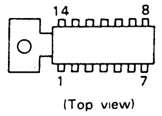
- ▨ : Conductor side pattern
- ⁚ : Component side pattern

5-4. SEMICONDUCTORS

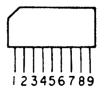
BA4558
CX23025
HA17558
NJM2903D
NJM4558D
NJM4558S
RC4558PD
TL082CP
μPC4082C
μPC4558C


8 7 6 5
1 2 3 4
(Top view)

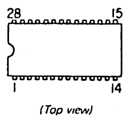
CX-158
CX-718D


14
8
1
7
(Top view)

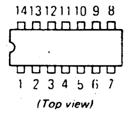
CX-894



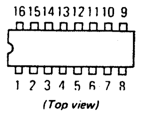
CXA1268P
MPC1394C


28
15
1
14
(Top view)

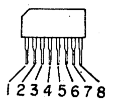
HD14001BP
HD14011BP
HD14023BP
HD14066BP
HD14069UBP
HD14071BP
HD14073BP
HD14081BP
HD14093BP
MB84011B
MB84066B
MC14001BCP
MC14011BCP
MC14023BCP
MC14069BCP
MC14071BCP
MC14073BCP
MC14081BCP
MC1496P
MC5433
TC4001BP
TC4011BP
TC4023BP
TC4030BP
TC4066BP
TC4069UBP
TC4071BP
TC4073BP
TC4081BP
TC4093BP
UA733CN
μPC1394C
μPD4001BC
μPD4011BC
μPD4023BC
μPD4030BC
μPD4066BC
μPD4069UBC
μPD4071BC
μPD4073BC
μPD4081BC
μPD4093BC


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

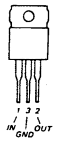
HD14027BP
HD14040BP
HD14053BP
HD14175BP
HD14520BP
HD14538BP
MB84027B
MB84053B
MC14027BCP
MC14040BCP
MC14053BCP
MC14175BCP
MC14520BCP
TC40175BP
TC4040BP
TC4053BP
TC4520BP
TC4538BP
TC504027BP
TL494CN
TL8608P
μPD4027BC
μPD4040BC
μPD4053BC
μPD4175BC
μPD4520C
μPD4538BC


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

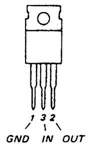
CX-20061
LA7016
M5218L



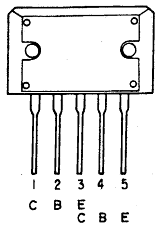
NJM7812A
NJM7812B
NJM78M12A
μPC78M12H
μPC7812H


1 3 2
IN
GND
OUT

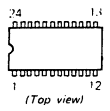
NJM79M12A
NJM7912A
μPC7912H


1 3 2
GND
IN
OUT

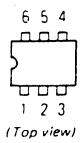
STR8124


1 2 3 4 5
C B E
C B E

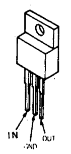
TA7193P


24
13
1
12
(Top view)

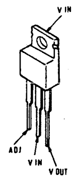
TX-429M


6 5 4
1 2 3
(Top view)

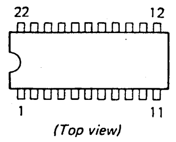
MPC78M05H



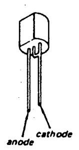
MPC79M05H


VIN
ADJ
VIN
VOUT

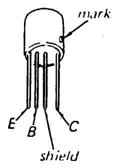
MPC1377C


22
12
1
11
(Top view)

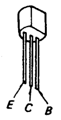
μPC574J


anode
cathode

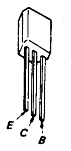
2SA109


mark
E
B
C
shield

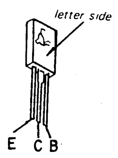
2SA1091
2SA844
2SA933S
2SC1740
2SC1890A
2SC2551
2SC2878
2SC3068



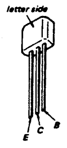
2SA1048
2SA1115
2SC3327
2SC2458
2SC2603
2SC2668
2SC403SP
DTA124ES
DTA144ES
DTC124ES
DTC143TS
DTC144ES



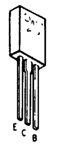
2SA1142
2SA1156
2SC2688
2SC2752
2SD669A


letter side
E C B

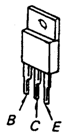
2SA1175
2SC2785


letter side
E C B

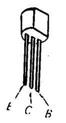
2SA1406
2SC3600
2SC3956



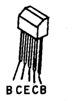
2SA473
2SB858
2SB860
2SB861
2SC1173
2SC3675
2SD1134
2SD1137



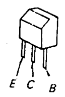
2SA893A
2SB740
2SC1475
2SC2230A
2SC2551
2SC2910
2SD789



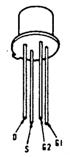
2SA979



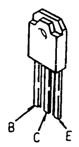
2SB734
2SD774



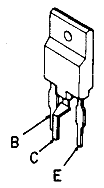
2SC2534



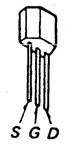
2SC2555



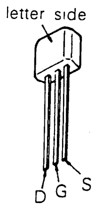
2SD1556



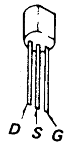
2SK381



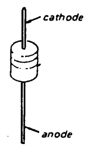
2SK514


letter side
D G S

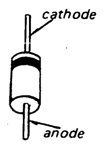
2SK523-K1
2SK523-K2
2SK523-L1



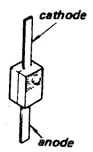
1SS119
1SS133T
1SS148
RD3.0ES-B
RD8.2ES-B2


cathode
anode

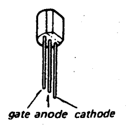
1SS83
1S1555
1S2076
EQA02-06AV3
EQA02-07DV3
EQA02-08AV3
EQA02-10BV3
EQA02-11DV3
EQA02-14BV3
ERD28-04S
ERD28-08S
HZ10EB3
HZ12EB2
HZ12A2L
HZ15EB3
HZ4.3EB1
HZ4.3EB2
HZ4.3EB3
HZ5.6EB2
HZ6.2EB1
HZ6.2EB2
HZ6.2EB3
HZ7.5EB2
HZ7.5EB3
HZ9.1EB2
RD10EB2
RD10EB3
RD12EB1
RD12EB2
RD12EB3
RD15EB3
RD3.0EB1
RD3.0EB2
RD3.9EB2
RD4.3EB1
RD4.3EB2
RD4.3EB3
RD4.7EL1
RD4.7EL2
RD4.7EL3
RD5.1ES-B
RD5.6ES-B1
RD5.6EB2
RD6.2EB1
RD6.2EB2
RD6.2EB3
RD7.5ESB2
RD7.5EB3
RD9.1EB1
RD9.1EB2
RD9.1EB3


cathode
anode

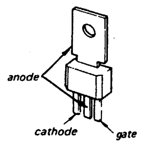
1T25


cathode
anode

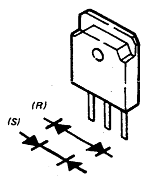
CR02AM-4
CR02AM-8


gate anode cathode

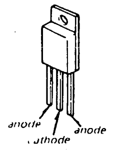
CR3CM-8


anode
cathode
gate

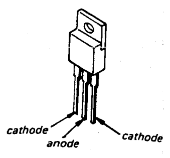
CTU-38R
CTU-38S



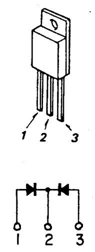
ESAC25-04C


anode
anode
cathode

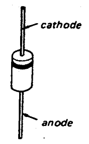
ESAC25-04N
ESAD25-04D


cathode
anode
cathode

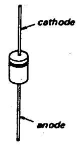
ESAC31-02D



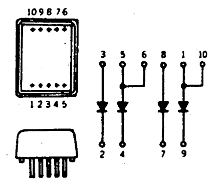
10E2
ERB81-004
GP08D
HZT33-02


cathode
anode

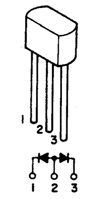
HZ12EB1
HZ12EB3
HZ3.0EB1
HZ3.0EB2
HZ3.9EB2
HZ9.1EB1
HZ9.1EB3


cathode
anode

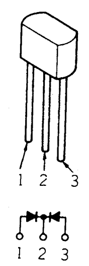
LT-9220H


10 9 8 7 6
1 2 3 4 5
3 5 6 8 1 10
2 4 7 9

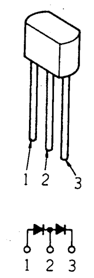
MC911



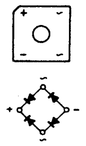
MC921



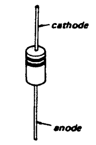
MC931



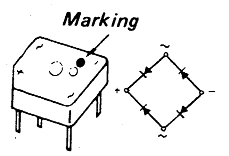
RB406NH



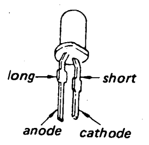
ERC24-04S
ERC24-06S
RH-1
RU-1A
SIB01-02


cathode
anode

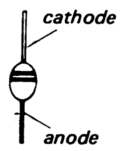
S3WB60Z



TLG124A
TLR124
TLY124
TLO124


long
short
anode
cathode

U05G
V11N


cathode
anode

SECTION 6
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

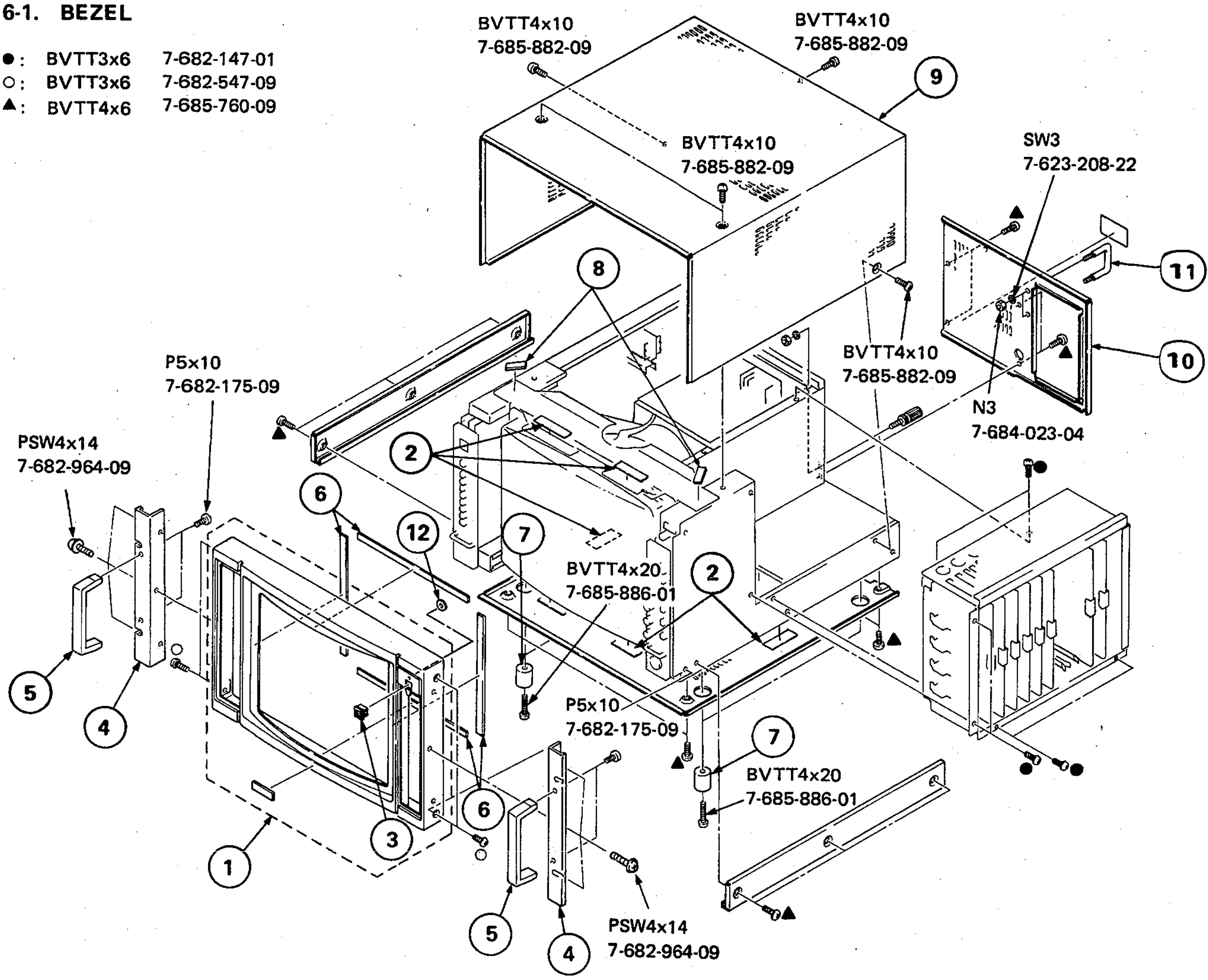
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

6-1. BEZEL

●: BVTT3x6 7-682-147-01
○: BVTT3x6 7-682-547-09
▲: BVTT4x6 7-685-760-09


BVTT4x10
7-685-882-09
BVTT4x10
7-685-882-09
9
BVTT4x10
7-685-882-09
SW3
7-623-208-22
11
8
10
BVTT4x10
7-685-882-09
N3
7-684-023-04
P5x10
7-682-175-09
PSW4x14
7-682-964-09
2
6
12
7
BVTT4x20
7-685-886-01
2
5
4
P5x10
7-682-175-09
7
BVTT4x20
7-685-886-01
6
3
1
5
4
PSW4x14
7-682-964-09

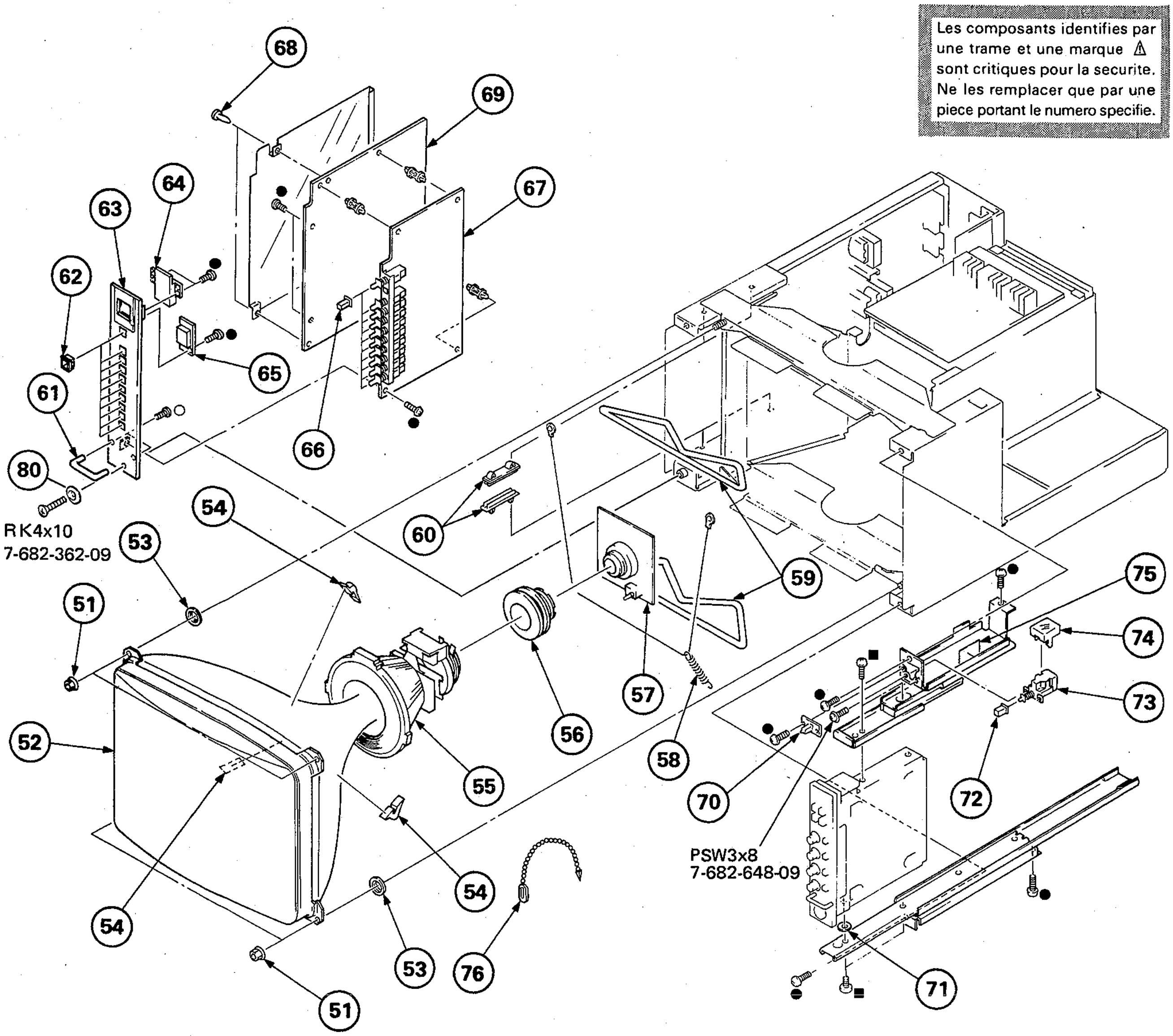
No.	Part No.	Description	Remark
1	X-4379-403-2	BEZEL ASSY	3
2	4-864-324-11	SPACER	
3	4-379-423-01	ESCUTCHEON (A)	
4	*4-391-207-01	BASE, HANDLE	
5	*4-337-212-11	HANDLE	
6	4-304-087-02	CUSHION, (A) PICTURE TUBE	
7	3-642-656-01	FOOT	
8	2-532-835-00	DAMPER, CASE (LOWER)	
9	*4-379-461-01	CABINET	
10	*4-379-450-01	COVER, BACK	
11	*4-379-476-01	PROTECTOR, CONNECTOR	
12	*4-309-378-00	SPACER	

6-2. PICTURE TUBE

●: BVTT3x6 7-682-147-01
○: BVTT3x6 7-682-547-09
■: B4x6 7-682-560-04

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

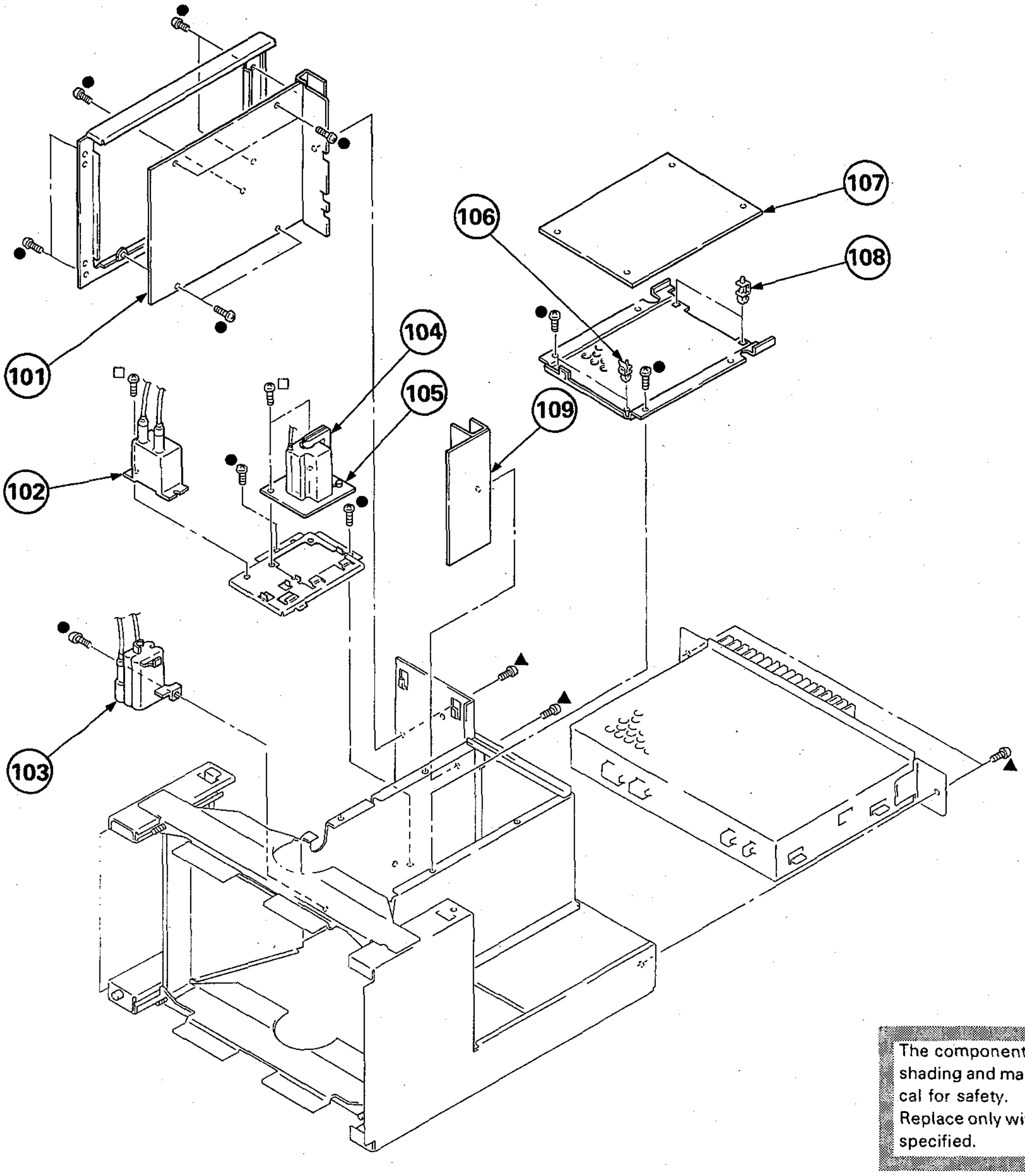
Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.



No.	Part No.	Description	Remark
51	4-306-034-00	FLANGE NUT, (B) 5MM	
52	8-734-521-05	PICTURE TUBE (M34KBE21X) (BVM-1415P, BVM-1415PM ONLY)	
	8-734-721-05	PICTURE TUBE (M34KBE20X)(BVM-1315 ONLY)	
53	4-348-567-00	WASHER, PICTURE TUBE POSITION	
54	3-703-961-01	SPACER, DY	
55	⚠1-451-329-11	DEFLECTION YOKE (SY-222)	
56	⚠1-452-436-11	NECK ASSY, CRT (NA292)	
57	*A-1330-902-A	C BOARD, COMPLETE	
58	4-303-774-XX	SPRING	
59	⚠1-426-263-11	COIL, DEMAGNETIZATION	
60	*3-680-613-01	SUPPORT, PC BOARD	
61	4-379-421-01	HANDLE, DRAWER	
62	4-379-423-01	ESCUTCHEON (A)	
63	4-391-218-01	PANEL (L), CONTROL	
64	4-379-418-01	COVER, LAMP	
65	*1-627-676-11	X BOARD	
66	4-374-839-01	BUTTON (A)	
67	*1-627-675-11	HA BOARD	
68	*4-302-557-11	CLIP	
69	*A-1345-801-A	D BOARD, COMPLETE	
70	*1-627-671-11	Y BOARD	
71	4-866-147-11	SPACER	
72	4-374-839-11	BUTTON (A)	
73	⚠1-570-052-12	SWITCH, PUSH (AC POWER)(1 KEY)	
74	4-373-038-01	COVER, SWITCH, POWER	
75	*3-327-655-01	CUSHION, CONTROL BUTTON	
76	4-308-870-00	CLIP, LEAD WIRE	
80	3-703-225-11	WASHER	

6-3. CHASSIS

●: BVTT3x6 7-682-147-01
□: BVTT3x10 7-682-549-04
▲: BVTT4x6 7-685-760-09



The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

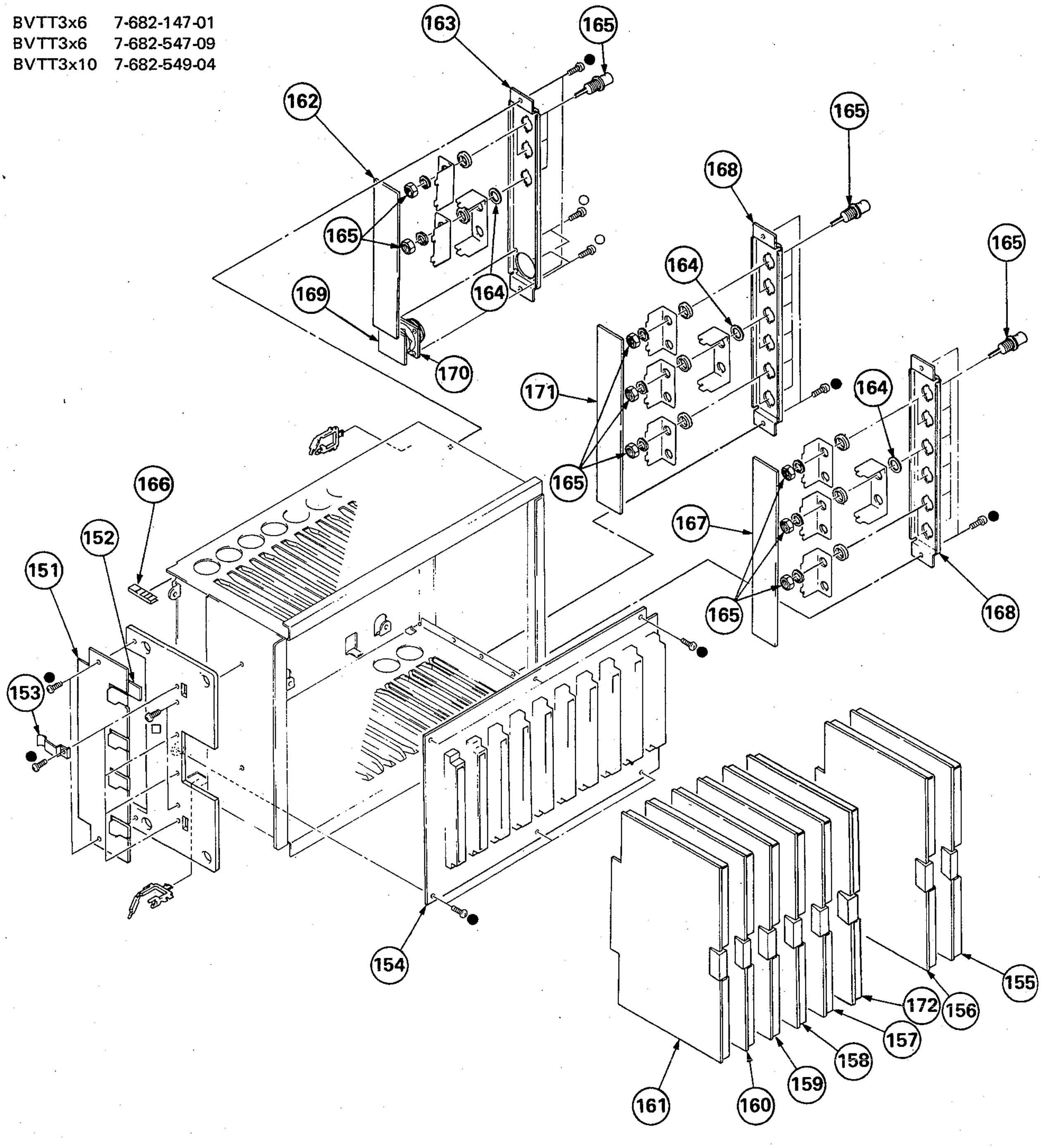
Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

No.	Part No.	Description	Remark
101	*A-1345-802-A	EA BOARD, COMPLETE	
102	⚠1-162-142-21	CAP BLOCK, HIGH VOLTAGE	
103	⚠1-238-301-11	RESISTOR ASSY, HIGH-VOLTAGE	
104	⚠1-439-395-11	TRANSFORMER ASSY, FLYBACK	
105	*1-627-670-11	P BOARD	

No.	Part No.	Description	Remark
106	*3-703-141-00	HOLDER, PCB	
107	*A-1135-523-A	BK BOARD, COMPLETE	
108	*4-353-620-02	HINGE, PC BOARD	
109	*A-1345-800-A	EB BOARD, COMPLETE	

6-4. SIGNAL BLOCK

●: BVTT3x6 7-682-147-01
○: BVTT3x6 7-682-547-09
□: BVTT3x10 7-682-549-04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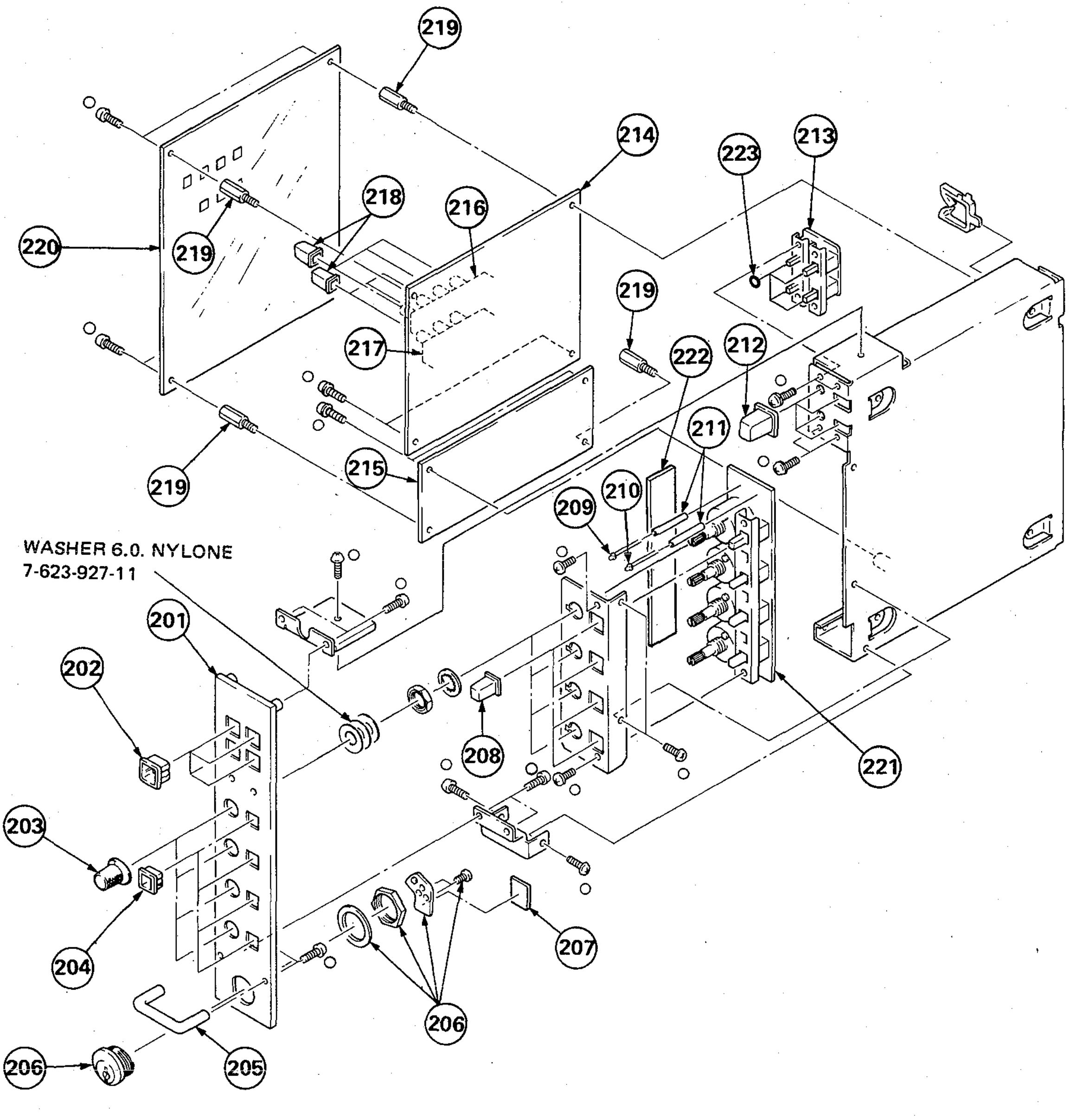
No.	Part No.	Description	Remark
151	*1-617-885-11	GC BOARD	
152	4-370-970-01	SPACER, TR	
153	*4-363-404-00	HOLDER, IC	
154	*1-617-899-11	TB BOARD	
155	*A-1135-355-A	BA BOARD, COMPLETE	
156	*A-1135-356-A	BB BOARD, COMPLETE (BVM-1315 ONLY)	
157	*A-1135-357-A	BC BOARD, COMPLETE (BVM-1315 ONLY)	
158	*A-1135-537-A	BG BOARD, COMPLETE	
159	*A-1135-359-A	BH BOARD, COMPLETE	
160	*A-1135-522-A	BI BOARD, COMPLETE	
161	*A-1135-361-A	BJ BOARD, COMPLETE	

No.	Part No.	Description	Remark
162	*1-627-678-11	W BOARD	
163	*4-391-220-01	PANEL (C), CONNECTOR	
164	*4-379-404-01	INSULATOR, BNC	
165	1-565-791-11	CONNECTOR, BNC 1P	
166	*4-911-234-01	EDGING	
167	*1-617-895-11	QA BOARD	
168	*4-379-439-01	PANEL (A), CONNECTOR	
169	*1-627-677-11	V BOARD	
170	1-563-265-11	CONNECTOR, MULTIPLE 10P	
171	*1-618-786-11	QB BOARD	
172	*A-1135-391-A	BD BOARD, COMPLETE (BVM-1415P ONLY)	
	*A-1135-424-A	BM BOARD COMPLETE (BVM-1415PM ONLY)	

6-5. DRAWER BLOCK (RIGHT)

○: BVTT3x6 7-682-547-09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WASHER 6.0. NYLONE
7-623-927-11
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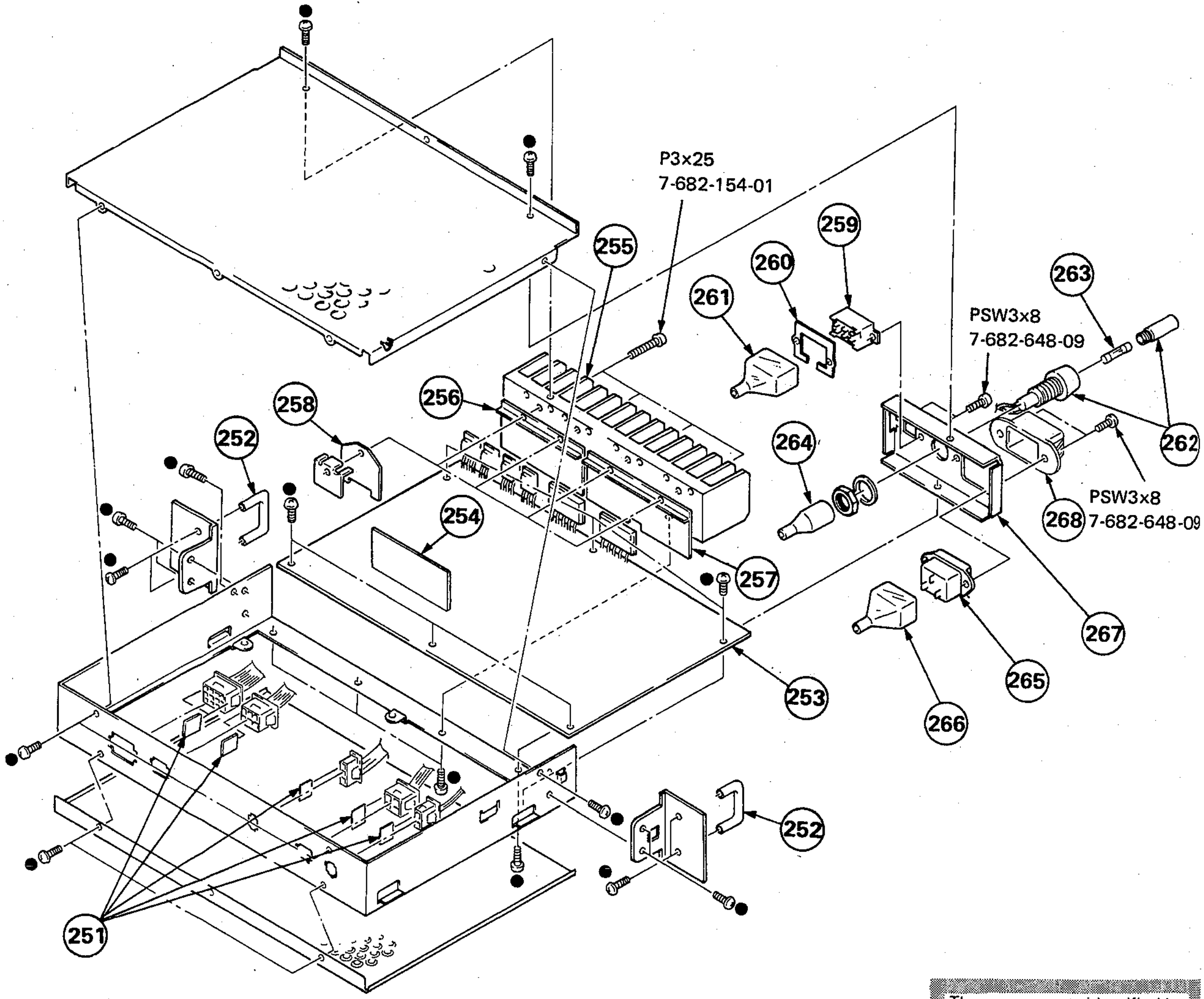
No.	Part No.	Description	Remark
201	4-379-453-11	PANEL (RIGHT), CONTROL	
202	4-379-423-01	ESCUTCHEON (A)	
203	X-3673-635-0	KNOB (1) ASSY, CONTROL	
204	4-379-424-01	ESCUTCHEON (B)	
205	4-379-421-01	HANDLE, DRAWER	
206	4-378-917-01	LOCK, CYLINDER	
207	4-337-209-11	PROTECTOR, SCRATCH	
208	4-379-422-01	BUTTON (B)	
209	8-719-812-41	DIODE TLR124	
210	8-719-812-42	DIODE TLY124	
211	*4-026-910-00	HOLDER, LED	
212	4-374-839-01	BUTTON (A)	
213	*1-617-887-11	HC BOARD	
214	*1-627-680-11	HB BOARD	
215	*1-618-814-11	HE BOARD	
216	1-570-568-11	SWITCH, PUSH (4 KEY)	
217	1-570-569-11	SWITCH, PUSH (3 KEY)	
218	4-369-627-11	PUSH BUTTON	
219	*2-264-136-00	SUPPORT, SWITCH, PUSH BUTTON	
220	*4-379-475-01	COVER, HB PC BOARD	
221	*1-627-681-11	HG BOARD	
222	*1-627-682-11	HH BOARD	
223	3-672-251-00	RING (M4), O	

6-6. POWER BLOCK

●: BVTT3x6 7-682-147-01



The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

No.	Part No.	Description	Remark
251	3-675-469-00	SPACER, SOLENOID	
252	4-379-421-01	HANDLE, DRAWER	
253	*A-1316-089-A	GA BOARD, COMPLETE (BVM-1315 ONLY)	
	*A-1316-090-A	GA BOARD, COMPLETE (BVM-1415P ONLY)	
	*A-1316-048-A	GA BOARD, COMPLETE (BVM-1415PM ONLY)	
254	*1-627-679-11	GB BOARD (BVM-1315, BVM-1415P ONLY)	
	*1-617-884-11	GB BOARD (BVM-1415PM ONLY)	
255	*4-347-706-00	HEAT SINK (TR)	
256	4-379-410-01	SPACER (G2), POLISHING	
257	4-379-403-01	SPACER (G1), POLISHING	
258	*4-379-408-01	INSULATOR (G3)	

No.	Part No.	Description	Remark
259	⚠.1-554-913-11	SWITCH, SLIDE (VOLTAGE CHANGE)	
260	*4-379-409-01	NUT, PLATE	
261	*4-371-879-02	COVER, AC SELECT	
262	1-533-148-00	HOLDER, FUSE	
263	⚠.1-532-203-11	FUSE, TIME-LAG 2A/250V (BVM-1415P ONLY)	
	⚠.1-532-746-11	FUSE, GLASS TUBE 4A/125V (BVM-1315, BVM-1415PM ONLY)	
264	*4-371-803-01	COVER, FUSE HOLDER	
265	⚠.1-509-546-11	3P INLET	
266	*4-601-466-11	COVER, 3P INLET	
267	*4-379-430-01	PANEL, POWER	
268	*2-990-241-01	PLUG HOLDER	

NOTE: The exclusive board (BD, BM and GA) for BVM-1415P/PM is explained on page 7-30 and later.

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

- The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Ref.No.	Part No.	Description				Remark
	*1-617-899-11	TB BOARD ********				
		RESISTOR				
R100	1-249-422-11	CARBON	2.7K	5%	1/4W	
		CONNECTOR				
TB4	*1-566-054-11	PIN, CONNECTOR 2P				
TB5	*1-566-054-11	PIN, CONNECTOR 2P				
TB6	*1-566-060-11	PIN, CONNECTOR 8P				
TB7	*1-566-054-11	PIN, CONNECTOR 2P				
TB8	*1-566-058-11	PIN, CONNECTOR 6P				
TB9	*1-566-060-11	PIN, CONNECTOR 8P				
TB10	*1-566-064-11	PIN, CONNECTOR 12P				
TB11	*1-566-055-11	PIN, CONNECTOR 3P				
TB12	*1-566-064-11	PIN, CONNECTOR 12P				
TB13	*1-566-062-11	PIN, CONNECTOR 10P				
TB14	*1-566-064-11	PIN, CONNECTOR 12P				
TB15	*1-566-060-11	PIN, CONNECTOR 8P				
TB16	*1-566-057-11	PIN, CONNECTOR 5P				
TB17	*1-566-057-11	PIN, CONNECTOR 5P				
TB18	*1-566-055-11	PIN, CONNECTOR 3P				
TB19	*1-566-056-11	PIN, CONNECTOR 4P				
TB20	*1-566-056-11	PIN, CONNECTOR 4P				
TB21	*1-566-056-11	PIN, CONNECTOR 4P				
TB22	*1-566-054-11	PIN, CONNECTOR 2P				
TB23	*1-566-054-11	PIN, CONNECTOR 2P				
TB24	*1-566-054-11	PIN, CONNECTOR 2P				
TB28	*1-566-062-11	PIN, CONNECTOR 10P				
TB31	*1-561-337-00	CONNECTOR, MULTI				
TB32	*1-561-337-00	CONNECTOR, MULTI				
TB33	*1-561-337-00	CONNECTOR, MULTI				
TB34	*1-561-337-00	CONNECTOR, MULTI				
TB35	*1-561-337-00	CONNECTOR, MULTI				
TB36	*1-561-337-00	CONNECTOR, MULTI				
TB37	*1-561-337-00	CONNECTOR, MULTI				
TB38	*1-561-337-00	CONNECTOR, MULTI				
TB39	*1-561-337-00	CONNECTOR, MULTI				
TB40	*1-561-337-00	CONNECTOR, MULTI				

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Ref.No.	Part No.	Description	Remark
	*A-1135-355-A	BA BOARD, COMPLETE ******************	
	*4-353-708-00	HOOK, FINGER	
		CONNECTOR	
BA1	*1-566-054-11	PIN, CONNECTOR 2P	
BA2	*1-566-054-11	PIN, CONNECTOR 2P	
BA3	*1-566-054-11	PIN, CONNECTOR 2P	
BA4	*1-566-054-11	PIN, CONNECTOR 2P	
BA5	*1-566-054-11	PIN, CONNECTOR 2P	
BA6	*1-566-054-11	PIN, CONNECTOR 2P	

Ref.No.	Part No.	Description				Remark
		CAPACITOR				
C1	1-123-332-00	ELECT	47MF	20%	16V	
C2	1-123-332-00	ELECT	47MF	20%	16V	
C3	1-123-332-00	ELECT	47MF	20%	16V	
C4	1-123-356-00	ELECT	10MF	20%	16V	
C5	1-123-332-00	ELECT	47MF	20%	16V	
C6	1-123-332-00	ELECT	47MF	20%	16V	
C7	1-123-332-00	ELECT	47MF	20%	16V	
C8	1-123-332-00	ELECT	47MF	20%	16V	
C9	1-101-004-00	CERAMIC	0.01MF		50V	
C10	1-101-004-00	CERAMIC	0.01MF		50V	
C11	1-124-119-00	ELECT	330MF	20%	16V	
C12	1-123-356-00	ELECT	10MF	20%	16V	
C13	1-123-356-00	ELECT	10MF	20%	16V	
C14	1-123-356-00	ELECT	10MF	20%	16V	
C15	1-123-356-00	ELECT	10MF	20%	16V	
C16	1-123-356-00	ELECT	10MF	20%	16V	
C17	1-123-356-00	ELECT	10MF	20%	16V	
C18	1-123-356-00	ELECT	10MF	20%	16V	
C19	1-123-356-00	ELECT	10MF	20%	16V	
C20	1-101-004-00	CERAMIC	0.01MF		50V	
C21	1-101-006-00	CERAMIC	0.047MF		50V	
C31	1-101-004-00	CERAMIC	0.01MF		50V	
C32	1-123-356-00	ELECT	10MF	20%	16V	
C33	1-123-356-00	ELECT	10MF	20%	16V	
C34	1-123-356-00	ELECT	10MF	20%	16V	
C35	1-123-356-00	ELECT	10MF	20%	16V	
C36	1-123-356-00	ELECT	10MF	20%	16V	
C37	1-123-356-00	ELECT	10MF	20%	16V	
C38	1-123-356-00	ELECT	10MF	20%	16V	
C39	1-101-004-00	CERAMIC	0.01MF		50V	
C51	1-124-119-00	ELECT	330MF	20%	16V	
C52	1-123-356-00	ELECT	10MF	20%	16V	
C53	1-123-356-00	ELECT	10MF	20%	16V	
C54	1-123-356-00	ELECT	10MF	20%	16V	
C55	1-123-356-00	ELECT	10MF	20%	16V	
C56	1-123-356-00	ELECT	10MF	20%	16V	
C57	1-123-356-00	ELECT	10MF	20%	16V	
C71	1-101-004-00	CERAMIC	0.01MF		50V	
C72	1-101-004-00	CERAMIC	0.01MF		50V	
C73	1-101-004-00	CERAMIC	0.01MF		50V	
C74	1-101-004-00	CERAMIC	0.01MF		50V	
C75	1-101-004-00	CERAMIC	0.01MF		50V	
C76	1-101-004-00	CERAMIC	0.01MF		50V	
C77	1-101-004-00	CERAMIC	0.01MF		50V	
C101	1-102-038-00	CERAMIC	0.001MF		500V	
C102	1-123-356-00	ELECT	10MF	20%	16V	
C103	1-102-951-00	CERAMIC	15PF	5%	50V	
C104	1-123-379-00	ELECT	0.47MF	20%	50V	
C201	1-102-038-00	CERAMIC	0.001MF		500V	
C202	1-123-356-00	ELECT	10MF	20%	16V	

BA

Ref.No.	Part No.	Description			Remark
C203	1-102-951-00	CERAMIC	15PF	5%	50V
C204	1-123-379-00	ELECT	0.47MF	20%	50V
C301	1-102-038-00	CERAMIC	0.001MF		500V
C302	1-123-356-00	ELECT	10MF	20%	16V
C303	1-102-965-00	CERAMIC	39PF	5%	50V
C304	1-123-379-00	ELECT	0.47MF	20%	50V
C305	1-102-947-00	CERAMIC	10PF	0.5PF	50V
C306	1-102-942-00	CERAMIC	5PF	1PF	50V
C401	1-102-038-00	CERAMIC	0.001MF		500V
C402	1-123-356-00	ELECT	10MF	20%	16V
C403	1-102-951-00	CERAMIC	15PF	5%	50V
C404	1-123-379-00	ELECT	0.47MF	20%	50V
C501	1-102-038-00	CERAMIC	0.001MF		500V
C502	1-123-356-00	ELECT	10MF	20%	16V
C503	1-102-951-00	CERAMIC	15PF	5%	50V
C504	1-123-379-00	ELECT	0.47MF	20%	50V
C601	1-102-038-00	CERAMIC	0.001MF		500V
C602	1-123-356-00	ELECT	10MF	20%	16V
C603	1-102-951-00	CERAMIC	15PF	5%	50V
C604	1-123-379-00	ELECT	0.47MF	20%	50V
C701	1-102-976-00	CERAMIC	180PF	5%	50V
C702	1-102-947-00	CERAMIC	10PF	0.5PF	50V
C703	1-123-356-00	ELECT	10MF	20%	16V
C704	1-123-332-00	ELECT	47MF	20%	16V
C705	1-136-153-00	FILM	0.01MF	5%	50V
C706	1-123-380-00	ELECT	1MF	20%	50V
C707	1-123-369-00	ELECT	4.7MF	20%	25V
C708	1-123-356-00	ELECT	10MF	20%	16V
C709	1-102-973-00	CERAMIC	100PF	5%	50V
C710	1-130-481-00	MYLAR	0.0068MF	5%	50V
C711	1-136-155-00	FILM	0.015MF	5%	50V
C712	1-130-471-00	MYLAR	0.001MF	5%	50V
C713	1-123-380-00	ELECT	1MF	20%	50V
C714	1-102-973-00	CERAMIC	100PF	5%	50V
C715	1-101-361-00	CERAMIC	150PF	5%	50V
C716	1-136-153-00	FILM	0.01MF	5%	50V
C717	1-102-973-00	CERAMIC	100PF	5%	50V

TRIMMER

Ref.No.	Part No.	Description
CV101	1-141-138-XX	CAP, TRIMMER, 5PF-8PF
CV102	1-141-260-00	TRIMMER, CERAMIC
CV201	1-141-138-XX	CAP, TRIMMER, 5PF-8PF
CV202	1-141-260-00	TRIMMER, CERAMIC
CV401	1-141-138-XX	CAP, TRIMMER, 5PF-8PF
CV402	1-141-260-00	TRIMMER, CERAMIC
CV501	1-141-138-XX	CAP, TRIMMER, 5PF-8PF
CV502	1-141-260-00	TRIMMER, CERAMIC
CV601	1-141-138-XX	CAP, TRIMMER, 5PF-8PF
CV602	1-141-260-00	TRIMMER, CERAMIC

DIODE

Ref.No.	Part No.	Description
D1	8-719-100-15	DIODE RD3.0E-B2
D2	8-719-000-06	DIODE MC921
D4	8-719-000-04	DIODE MC911
D701	8-719-911-19	DIODE 1SS119
D702	8-719-100-23	DIODE RD4.3E-B2
D703	8-719-911-19	DIODE 1SS119
D704	8-719-911-19	DIODE 1SS119
D705	8-719-911-19	DIODE 1SS119
D706	8-719-911-19	DIODE 1SS119
D707	8-719-911-19	DIODE 1SS119
D708	8-719-911-19	DIODE 1SS119
D709	8-719-911-19	DIODE 1SS119

Ref.No.	Part No.	Description	Remark
D710	8-719-911-19	DIODE 1SS119	

IC

Ref.No.	Part No.	Description
IC1	8-759-208-94	IC CX894
IC2	8-759-208-94	IC CX894
IC3	8-759-140-53	IC UPD4053BC

TRANSISTOR

Ref.No.	Part No.	Description
Q1	8-729-900-89	TRANSISTOR DTC144ES
Q2	8-729-384-48	TRANSISTOR 2SA844
Q3	8-729-900-89	TRANSISTOR DTC144ES
Q4	8-729-900-89	TRANSISTOR DTC144ES
Q5	8-729-900-89	TRANSISTOR DTC144ES
Q6	8-729-900-65	TRANSISTOR DTA144ES
Q101	8-729-266-83	TRANSISTOR 2SC2668
Q102	8-729-266-83	TRANSISTOR 2SC2668
Q103	8-729-266-83	TRANSISTOR 2SC2668
Q104	8-729-384-48	TRANSISTOR 2SA844
Q105	8-729-266-83	TRANSISTOR 2SC2668
Q201	8-729-266-83	TRANSISTOR 2SC2668
Q202	8-729-266-83	TRANSISTOR 2SC2668
Q203	8-729-266-83	TRANSISTOR 2SC2668
Q204	8-729-384-48	TRANSISTOR 2SA844
Q205	8-729-266-83	TRANSISTOR 2SC2668
Q301	8-729-266-83	TRANSISTOR 2SC2668
Q302	8-729-266-83	TRANSISTOR 2SC2668
Q303	8-729-266-83	TRANSISTOR 2SC2668
Q304	8-729-384-48	TRANSISTOR 2SA844
Q305	8-729-266-83	TRANSISTOR 2SC2668
Q401	8-729-266-83	TRANSISTOR 2SC2668
Q402	8-729-266-83	TRANSISTOR 2SC2668
Q403	8-729-266-83	TRANSISTOR 2SC2668
Q404	8-729-384-48	TRANSISTOR 2SA844
Q405	8-729-266-83	TRANSISTOR 2SC2668
Q501	8-729-266-83	TRANSISTOR 2SC2668
Q502	8-729-266-83	TRANSISTOR 2SC2668
Q503	8-729-266-83	TRANSISTOR 2SC2668
Q504	8-729-384-48	TRANSISTOR 2SA844
Q505	8-729-266-83	TRANSISTOR 2SC2668
Q601	8-729-266-83	TRANSISTOR 2SC2668
Q602	8-729-266-83	TRANSISTOR 2SC2668
Q603	8-729-266-83	TRANSISTOR 2SC2668
Q604	8-729-384-48	TRANSISTOR 2SA844
Q605	8-729-266-83	TRANSISTOR 2SC2668
Q701	8-729-600-60	TRANSISTOR 2SA1115P
Q702	8-729-178-54	TRANSISTOR 2SC2785
Q703	8-729-178-54	TRANSISTOR 2SC2785
Q704	8-729-178-54	TRANSISTOR 2SC2785
Q705	8-729-178-54	TRANSISTOR 2SC2785
Q706	8-729-600-60	TRANSISTOR 2SA1115P
Q707	8-729-178-54	TRANSISTOR 2SC2785
Q708	8-729-600-60	TRANSISTOR 2SA1115P
Q709	8-729-178-54	TRANSISTOR 2SC2785
Q710	8-729-611-53	TRANSISTOR 2SA1115-F
Q711	8-729-600-60	TRANSISTOR 2SA1115P
Q712	8-729-611-53	TRANSISTOR 2SA1115-F
Q713	8-729-600-60	TRANSISTOR 2SA1115P
Q714	8-729-178-54	TRANSISTOR 2SC2785
Q715	8-729-800-10	TRANSISTOR 2SC3068
Q716	8-729-178-54	TRANSISTOR 2SC2785
Q717	8-729-611-53	TRANSISTOR 2SA1115-F

BA

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-405-11	CARBON	100	5%	1/4W	
R2	1-249-405-11	CARBON	100	5%	1/4W	
R3	1-249-405-11	CARBON	100	5%	1/4W	
R4	1-249-437-11	CARBON	47K	5%	1/4W	
R5	1-249-405-11	CARBON	100	5%	1/4W	
R6	1-249-432-11	CARBON	18K	5%	1/4W	
R7	1-249-434-11	CARBON	27K	5%	1/4W	
R8	1-249-422-11	CARBON	2.7K	5%	1/4W	
R9	1-249-405-11	CARBON	100	5%	1/4W	
R10	1-249-405-11	CARBON	100	5%	1/4W	
R11	1-249-433-11	CARBON	22K	5%	1/4W	
R12	1-249-405-11	CARBON	100	5%	1/4W	
R13	1-249-437-11	CARBON	47K	5%	1/4W	
R14	1-249-429-11	CARBON	10K	5%	1/4W	
R101	1-249-417-11	CARBON	1K	5%	1/4W	
R102	1-249-418-11	CARBON	1.2K	5%	1/4W	
R103	1-249-425-11	CARBON	4.7K	5%	1/4W	
R104	1-249-405-11	CARBON	100	5%	1/4W	
R105	1-215-437-00	METAL	4.7K	1%	1/6W	
R106	1-249-430-11	CARBON	12K	5%	1/4W	
R107	1-249-433-11	CARBON	22K	5%	1/4W	
R108	1-215-427-00	METAL	1.8K	1%	1/6W	
R109	1-215-415-00	METAL	560	1%	1/6W	
R110	1-249-405-11	CARBON	100	5%	1/4W	
R111	1-215-431-00	METAL	2.7K	1%	1/6W	
R112	1-249-421-11	CARBON	2.2K	5%	1/4W	
R113	1-249-393-11	CARBON	10	5%	1/4W	
R201	1-249-417-11	CARBON	1K	5%	1/4W	
R202	1-249-418-11	CARBON	1.2K	5%	1/4W	
R203	1-249-425-11	CARBON	4.7K	5%	1/4W	
R204	1-249-405-11	CARBON	100	5%	1/4W	
R205	1-215-437-00	METAL	4.7K	1%	1/6W	
R206	1-249-430-11	CARBON	12K	5%	1/4W	
R207	1-249-433-11	CARBON	22K	5%	1/4W	
R208	1-215-427-00	METAL	1.8K	1%	1/6W	
R209	1-215-415-00	METAL	560	1%	1/6W	
R210	1-249-405-11	CARBON	100	5%	1/4W	
R211	1-215-431-00	METAL	2.7K	1%	1/6W	
R212	1-249-421-11	CARBON	2.2K	5%	1/4W	
R213	1-249-393-11	CARBON	10	5%	1/4W	
R301	1-249-417-11	CARBON	1K	5%	1/4W	
R302	1-249-418-11	CARBON	1.2K	5%	1/4W	
R303	1-249-426-11	CARBON	5.6K	5%	1/4W	
R304	1-249-405-11	CARBON	100	5%	1/4W	
R305	1-249-426-11	CARBON	5.6K	5%	1/4W	
R306	1-249-430-11	CARBON	12K	5%	1/4W	
R307	1-249-432-11	CARBON	18K	5%	1/4W	
R308	1-249-421-11	CARBON	2.2K	5%	1/4W	
R309	1-249-417-11	CARBON	1K	5%	1/4W	
R310	1-249-405-11	CARBON	100	5%	1/4W	
R311	1-249-417-11	CARBON	1K	5%	1/4W	
R312	1-249-421-11	CARBON	2.2K	5%	1/4W	
R313	1-249-393-11	CARBON	10	5%	1/4W	
R401	1-249-417-11	CARBON	1K	5%	1/4W	
R402	1-249-418-11	CARBON	1.2K	5%	1/4W	
R403	1-249-425-11	CARBON	4.7K	5%	1/4W	
R404	1-249-405-11	CARBON	100	5%	1/4W	
R405	1-215-437-00	METAL	4.7K	1%	1/6W	
R406	1-249-430-11	CARBON	12K	5%	1/4W	
R407	1-249-433-11	CARBON	22K	5%	1/4W	
R408	1-215-427-00	METAL	1.8K	1%	1/6W	
R409	1-215-415-00	METAL	560	1%	1/6W	
R410	1-249-405-11	CARBON	100	5%	1/4W	
R411	1-215-431-00	METAL	2.7K	1%	1/6W	
R412	1-249-421-11	CARBON	2.2K	5%	1/4W	
R413	1-249-393-11	CARBON	10	5%	1/4W	
R501	1-249-417-11	CARBON	1K	5%	1/4W	
R502	1-249-418-11	CARBON	1.2K	5%	1/4W	
R503	1-249-425-11	CARBON	4.7K	5%	1/4W	
R504	1-249-405-11	CARBON	100	5%	1/4W	
R505	1-215-437-00	METAL	4.7K	1%	1/6W	
R506	1-249-430-11	CARBON	12K	5%	1/4W	
R507	1-249-433-11	CARBON	22K	5%	1/4W	
R508	1-215-427-00	METAL	1.8K	1%	1/6W	
R509	1-215-415-00	METAL	560	1%	1/6W	
R510	1-249-405-11	CARBON	100	5%	1/4W	
R511	1-215-431-00	METAL	2.7K	1%	1/6W	
R512	1-249-421-11	CARBON	2.2K	5%	1/4W	
R513	1-249-393-11	CARBON	10	5%	1/4W	
R601	1-249-417-11	CARBON	1K	5%	1/4W	
R602	1-249-418-11	CARBON	1.2K	5%	1/4W	
R603	1-249-425-11	CARBON	4.7K	5%	1/4W	
R604	1-249-405-11	CARBON	100	5%	1/4W	
R605	1-215-437-00	METAL	4.7K	1%	1/6W	
R606	1-249-430-11	CARBON	12K	5%	1/4W	
R607	1-249-433-11	CARBON	22K	5%	1/4W	
R608	1-215-427-00	METAL	1.8K	1%	1/6W	
R609	1-215-415-00	METAL	560	1%	1/6W	
R610	1-249-405-11	CARBON	100	5%	1/4W	
R611	1-215-431-00	METAL	2.7K	1%	1/6W	
R612	1-249-421-11	CARBON	2.2K	5%	1/4W	
R613	1-249-393-11	CARBON	10	5%	1/4W	
R701	1-249-433-11	CARBON	22K	5%	1/4W	
R702	1-249-438-11	CARBON	56K	5%	1/4W	
R703	1-249-417-11	CARBON	1K	5%	1/4W	
R704	1-249-417-11	CARBON	1K	5%	1/4W	
R705	1-249-424-11	CARBON	3.9K	5%	1/4W	
R706	1-249-417-11	CARBON	1K	5%	1/4W	
R707	1-249-429-11	CARBON	10K	5%	1/4W	
R708	1-249-421-11	CARBON	2.2K	5%	1/4W	
R709	1-249-419-11	CARBON	1.5K	5%	1/4W	
R710	1-249-418-11	CARBON	1.2K	5%	1/4W	
R711	1-249-434-11	CARBON	27K	5%	1/4W	
R712	1-249-433-11	CARBON	22K	5%	1/4W	
R713	1-249-422-11	CARBON	2.7K	5%	1/4W	
R714	1-249-427-11	CARBON	6.8K	5%	1/4W	
R715	1-249-433-11	CARBON	22K	5%	1/4W	
R716	1-249-422-11	CARBON	2.7K	5%	1/4W	
R717	1-249-425-11	CARBON	4.7K	5%	1/4W	
R718	1-249-410-11	CARBON	270	5%	1/4W	
R719	1-249-414-11	CARBON	560	5%	1/4W	
R720	1-247-850-11	CARBON	6.2K	5%	1/4W	
R721	1-249-438-11	CARBON	56K	5%	1/4W	
R722	1-249-441-11	CARBON	100K	5%	1/4W	
R723	1-249-437-11	CARBON	47K	5%	1/4W	
R724	1-249-429-11	CARBON	10K	5%	1/4W	
R725	1-249-438-11	CARBON	56K	5%	1/4W	
R726	1-247-895-00	CARBON	470K	5%	1/4W	
R727	1-249-425-11	CARBON	4.7K	5%	1/4W	
R728	1-249-435-11	CARBON	33K	5%	1/4W	
R729	1-249-423-11	CARBON	3.3K	5%	1/4W	
R730	1-249-421-11	CARBON	2.2K	5%	1/4W	
R731	1-249-422-11	CARBON	2.7K	5%	1/4W	
R732	1-249-422-11	CARBON	2.7K	5%	1/4W	
R733	1-249-421-11	CARBON	2.2K	5%	1/4W	
R734	1-249-421-11	CARBON	2.2K	5%	1/4W	
R735	1-249-421-11	CARBON	2.2K	5%	1/4W	

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Ref.No.	Part No.	Description				Remark
R736	1-249-425-11	CARBON	4.7K	5%	1/4W	
R737	1-249-405-11	CARBON	100	5%	1/4W	
R738	1-249-441-11	CARBON	100K	5%	1/4W	
R739	1-249-433-11	CARBON	22K	5%	1/4W	
R740	1-249-417-11	CARBON	1K	5%	1/4W	
R741	1-202-473-00	SOLID	5.6M	5%	1/4W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description
RV101	1-237-514-21	RES, ADJ, CERMET 500
RV201	1-237-514-21	RES, ADJ, CERMET 500
RV401	1-237-514-21	RES, ADJ, CERMET 500
RV501	1-237-514-21	RES, ADJ, CERMET 500
RV601	1-237-514-21	RES, ADJ, CERMET 500

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Ref.No.	Part No.	Description
	*A-1135-356-A	BB BOARD, COMPLETE (BVM-1315 ONLY) ******************
	*4-353-708-00	HOOK, FINGER

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-123-332-00	ELECT	47MF	20%	16V	
C2	1-102-506-00	CERAMIC	7PF	0.5PF	50V	
C3	1-101-004-00	CERAMIC	0.01MF		50V	
C4	1-102-965-00	CERAMIC	39PF	5%	50V	
C5	1-102-506-00	CERAMIC	7PF	0.5PF	50V	
C6	1-101-004-00	CERAMIC	0.01MF		50V	
C7	1-101-004-00	CERAMIC	0.01MF		50V	
C8	1-101-004-00	CERAMIC	0.01MF		50V	
C9	1-101-004-00	CERAMIC	0.01MF		50V	
C11	1-123-330-00	ELECT	22MF	20%	16V	
C12	1-101-004-00	CERAMIC	0.01MF		50V	
C13	1-101-004-00	CERAMIC	0.01MF		50V	
C14	1-102-666-00	CERAMIC	12PF	5%	50V	
C15	1-101-361-00	CERAMIC	39PF	5%	50V	
C16	1-102-666-00	CERAMIC	12PF	5%	50V	
C17	1-102-884-00	CERAMIC	33PF	5%	50V	
C18	1-101-004-00	CERAMIC	0.01MF		50V	
C19	1-101-004-00	CERAMIC	0.01MF		50V	
C20	1-102-506-00	CERAMIC	7PF	0.5PF	50V	
C22	1-101-004-00	CERAMIC	0.01MF		50V	
C23	1-101-004-00	CERAMIC	0.01MF		50V	
C24	1-102-959-00	CERAMIC	22PF	5%	50V	
C26	1-101-004-00	CERAMIC	0.01MF		50V	
C27	1-101-004-00	CERAMIC	0.01MF		50V	
C28	1-101-880-00	CERAMIC	47PF	5%	50V	
C29	1-124-963-11	ELECT	33MF	20%	16V	
C30	1-101-004-00	CERAMIC	0.01MF		50V	
C101	1-101-884-00	CERAMIC	56PF	5%	50V	
C102	1-101-884-00	CERAMIC	56PF	5%	50V	
C103	1-101-884-00	CERAMIC	56PF	5%	50V	
C104	1-101-004-00	CERAMIC	0.01MF		50V	
C105	1-102-971-00	CERAMIC	82PF	5%	50V	
C106	1-101-004-00	CERAMIC	0.01MF		50V	
C108	1-101-004-00	CERAMIC	0.01MF		50V	
C109	1-102-965-00	CERAMIC	39PF	5%	50V	
C110	1-102-947-00	CERAMIC	10PF	0.5PF	50V	
C151	1-124-963-11	ELECT	33MF	20%	16V	
C152	1-101-004-00	CERAMIC	0.01MF		50V	
C161	1-124-963-11	ELECT	33MF	20%	16V	
C162	1-101-004-00	CERAMIC	0.01MF		50V	
C163	1-101-004-00	CERAMIC	0.01MF		50V	
C201	1-124-963-11	ELECT	33MF	20%	16V	
C202	1-101-004-00	CERAMIC	0.01MF			50V
C203	1-123-343-00	ELECT	33MF	20%		25V
C204	1-124-963-11	ELECT	33MF	20%		16V
C205	1-101-004-00	CERAMIC	0.01MF			50V
C206	1-123-343-00	ELECT	33MF	20%		25V
C207	1-101-004-00	CERAMIC	0.01MF			50V
C208	1-123-330-00	ELECT	22MF	20%		25V
C211	1-124-963-11	ELECT	33MF	20%		16V
C212	1-101-004-00	CERAMIC	0.01MF			50V
C213	1-124-963-11	ELECT	33MF	20%		16V
C214	1-101-004-00	CERAMIC	0.01MF			50V
C221	1-124-963-11	ELECT	33MF	20%		16V
C222	1-124-963-11	ELECT	33MF	20%		16V
C223	1-124-963-11	ELECT	33MF	20%		16V
C224	1-124-963-11	ELECT	33MF	20%		16V
C231	1-101-004-00	CERAMIC	0.01MF			50V
C232	1-101-004-00	CERAMIC	0.01MF			50V
C233	1-101-004-00	CERAMIC	0.01MF			50V
C234	1-101-004-00	CERAMIC	0.01MF			50V
C235	1-101-004-00	CERAMIC	0.01MF			50V
C236	1-101-004-00	CERAMIC	0.01MF			50V
C241	1-124-963-11	ELECT	33MF	20%		16V
C242	1-124-963-11	ELECT	33MF	20%		16V
C243	1-124-963-11	ELECT	33MF	20%		16V
C244	1-124-963-11	ELECT	33MF	20%		16V
C245	1-124-963-11	ELECT	33MF	20%		16V
C251	1-101-004-00	CERAMIC	0.01MF			50V
C252	1-101-004-00	CERAMIC	0.01MF			50V
C253	1-101-004-00	CERAMIC	0.01MF			50V
C254	1-101-004-00	CERAMIC	0.01MF			50V
C255	1-101-004-00	CERAMIC	0.01MF			50V

TRIMMER

Ref.No.	Part No.	Description
CV1	1-141-181-11	CAP, TRIMMER
CV2	1-141-181-11	CAP, TRIMMER
CV101	1-141-181-11	CAP, TRIMMER

DIODE

Ref.No.	Part No.	Description
D1	8-719-911-19	DIODE 1SS119
D2	8-719-110-08	DIODE RD8.2ES-B2
D3	8-719-109-88	DIODE RD5.6ES-B1
D4	8-719-911-19	DIODE 1SS119
D5	8-719-911-19	DIODE 1SS119

DELAY LINE

Ref.No.	Part No.	Description
DL1	1-415-348-11	DELAY LINE
DL2	1-415-379-21	DELAY LINE, 1H
DL3	1-415-477-11	DELAY LINE

IC

Ref.No.	Part No.	Description
IC1	8-759-014-96	IC MC1496P
IC2	8-759-907-33	IC UA733CN
IC3	8-759-014-96	IC MC1496P

COIL

Ref.No.	Part No.	Description	
L1	1-408-421-00	INDUCTOR	100UH
L2	1-408-529-00	COIL, VARIABLE	
L3	1-408-429-00	INDUCTOR	470UH
L4	1-408-421-00	INDUCTOR	100UH
L5	1-408-417-00	INDUCTOR	47UH

Ref.No.	Part No.	Description				Remark
L6	1-408-417-00	INDUCTOR	47UH			
L101	1-408-529-00	COIL, VARIABLE				
L102	1-408-429-00	INDUCTOR	470UH			
L103	1-408-409-00	INDUCTOR	10UH			

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-384-48	TRANSISTOR 2SA844	
Q2	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q3	8-729-384-48	TRANSISTOR 2SA844	
Q4	8-729-384-48	TRANSISTOR 2SA844	
Q5	8-729-384-48	TRANSISTOR 2SA844	
Q6	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q7	8-729-384-48	TRANSISTOR 2SA844	
Q8	8-729-384-48	TRANSISTOR 2SA844	
Q9	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q10	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q11	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q12	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q13	8-729-384-48	TRANSISTOR 2SA844	
Q14	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q15	8-729-800-10	TRANSISTOR 2SC3068	
Q16	8-729-384-48	TRANSISTOR 2SA844	
Q17	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q18	8-729-384-48	TRANSISTOR 2SA844	
Q19	8-729-384-48	TRANSISTOR 2SA844	
Q20	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q21	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q22	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q23	8-729-800-10	TRANSISTOR 2SC3068	
Q24	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q101	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q102	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q103	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q104	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q105	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q106	8-729-384-48	TRANSISTOR 2SA844	
Q201	8-729-103-43	TRANSISTOR 2SB734	
Q202	8-729-177-43	TRANSISTOR 2SD774	
Q203	8-729-900-63	TRANSISTOR DTA124ES	
Q204	8-729-900-89	TRANSISTOR DTC144ES	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-429-11	CARBON	10K	5%	1/4W	
R2	1-249-427-11	CARBON	6.8K	5%	1/4W	
R3	1-249-429-11	CARBON	10K	5%	1/4W	
R4	1-249-433-11	CARBON	22K	5%	1/4W	
R5	1-249-419-11	CARBON	1.5K	5%	1/4W	
R6	1-249-417-11	CARBON	1K	5%	1/4W	
R7	1-215-405-00	METAL	220	1%	1/6W	
R8	1-215-405-00	METAL	220	1%	1/6W	
R9	1-215-429-00	METAL	2.2K	1%	1/6W	
R10	1-249-417-11	CARBON	1K	5%	1/4W	
R11	1-249-422-11	CARBON	2.7K	5%	1/4W	
R12	1-215-421-00	METAL	1K	1%	1/6W	
R13	1-249-405-11	CARBON	100	5%	1/4W	
R14	1-249-417-11	CARBON	1K	5%	1/4W	
R15	1-249-422-11	CARBON	2.7K	5%	1/4W	
R16	1-215-427-00	METAL	1.8K	1%	1/6W	
R17	1-249-429-11	CARBON	10K	5%	1/4W	
R18	1-249-417-11	CARBON	1K	5%	1/4W	
R19	1-215-417-00	METAL	680	1%	1/6W	
R20	1-249-422-11	CARBON	2.7K	5%	1/4W	
R21	1-249-405-11	CARBON	100	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R22	1-249-422-11	CARBON	2.7K	5%	1/4W	
R23	1-249-437-11	CARBON	47K	5%	1/4W	
R24	1-249-433-11	CARBON	22K	5%	1/4W	
R25	1-249-405-11	CARBON	100	5%	1/4W	
R26	1-215-421-00	METAL	1K	1%	1/6W	
R27	1-215-421-00	METAL	1K	1%	1/6W	
R28	1-215-397-00	METAL	100	1%	1/6W	
R29	1-249-405-11	CARBON	100	5%	1/4W	
R30	1-249-422-11	CARBON	2.7K	5%	1/4W	
R31	1-249-405-11	CARBON	100	5%	1/4W	
R34	1-215-401-11	METAL	150	1%	1/6W	
R35	1-249-422-11	CARBON	2.7K	5%	1/4W	
R36	1-249-405-11	CARBON	100	5%	1/4W	
R37	1-249-422-11	CARBON	2.7K	5%	1/4W	
R38	1-249-422-11	CARBON	2.7K	5%	1/4W	
R39	1-215-401-11	METAL	150	1%	1/6W	
R40	1-215-394-00	METAL	75	1%	1/6W	
R41	1-215-394-00	METAL	75	1%	1/6W	
R42	1-249-433-11	CARBON	22K	5%	1/4W	
R43	1-249-433-11	CARBON	22K	5%	1/4W	
R44	1-249-405-11	CARBON	100	5%	1/4W	
R45	1-249-405-11	CARBON	100	5%	1/4W	
R46	1-215-373-31	METAL	10	1%	1/6W	
R47	1-249-405-11	CARBON	100	5%	1/4W	
R48	1-249-405-11	CARBON	100	5%	1/4W	
R49	1-215-421-00	METAL	1K	1%	1/6W	
R50	1-249-422-11	CARBON	2.7K	5%	1/4W	
R51	1-249-405-11	CARBON	100	5%	1/4W	
R52	1-215-415-00	METAL	560	1%	1/6W	
R53	1-215-419-00	METAL	820	1%	1/6W	
R54	1-249-405-11	CARBON	100	5%	1/4W	
R55	1-215-415-00	METAL	560	1%	1/6W	
R56	1-249-429-11	CARBON	10K	5%	1/4W	
R57	1-249-405-11	CARBON	100	5%	1/4W	
R58	1-215-421-00	METAL	1K	1%	1/6W	
R59	1-215-423-00	METAL	1.2K	1%	1/6W	
R60	1-215-423-00	METAL	1.2K	1%	1/6W	
R61	1-249-405-11	CARBON	100	5%	1/4W	
R62	1-215-413-00	METAL	470	1%	1/6W	
R63	1-249-405-11	CARBON	100	5%	1/4W	
R64	1-215-421-00	METAL	1K	1%	1/6W	
R65	1-215-421-00	METAL	1K	1%	1/6W	
R66	1-215-405-00	METAL	220	1%	1/6W	
R67	1-249-405-11	CARBON	100	5%	1/4W	
R68	1-249-425-11	CARBON	4.7K	5%	1/4W	
R69	1-249-405-11	CARBON	100	5%	1/4W	
R70	1-249-433-11	CARBON	22K	5%	1/4W	
R71	1-249-433-11	CARBON	22K	5%	1/4W	
R72	1-215-421-00	METAL	1K	1%	1/6W	
R73	1-215-425-00	METAL	1.5K	1%	1/6W	
R74	1-249-405-11	CARBON	100	5%	1/4W	
R76	1-249-417-11	CARBON	1K	5%	1/4W	
R77	1-215-433-00	METAL	3.3K	1%	1/6W	
R78	1-249-422-11	CARBON	2.7K	5%	1/4W	
R79	1-249-405-11	CARBON	100	5%	1/4W	
R80	1-249-422-11	CARBON	2.7K	5%	1/4W	
R81	1-215-421-00	METAL	1K	1%	1/6W	
R82	1-249-405-11	CARBON	100	5%	1/4W	
R84	1-249-417-11	CARBON	1K	5%	1/4W	
R85	1-215-415-00	METAL	560	1%	1/6W	
R86	1-249-413-11	CARBON	470	5%	1/4W	
R87	1-249-405-11	CARBON	100	5%	1/4W	
R88	1-215-421-00	METAL	1K	1%	1/6W	
R89	1-215-421-00	METAL	1K	1%	1/6W	
R92	1-249-422-11	CARBON	2.7K	5%	1/4W	

BB BC

Ref.No.	Part No.	Description				Remark
R93	1-249-432-11	CARBON	18K	5%	1/4W	
R94	1-249-433-11	CARBON	22K	5%	1/4W	
R96	1-249-429-11	CARBON	10K	5%	1/4W	
R97	1-249-421-11	CARBON	2.2K	5%	1/4W	
R98	1-215-409-00	METAL	330	1%	1/6W	
R99	1-215-380-00	METAL	20	1%	1/6W	
R101	1-249-437-11	CARBON	47K	5%	1/4W	
R102	1-249-431-11	CARBON	15K	5%	1/4W	
R103	1-249-405-11	CARBON	100	5%	1/4W	
R104	1-249-422-11	CARBON	2.7K	5%	1/4W	
R105	1-249-429-11	CARBON	10K	5%	1/4W	
R106	1-249-429-11	CARBON	10K	5%	1/4W	
R107	1-249-420-11	CARBON	1.8K	5%	1/4W	
R108	1-249-405-11	CARBON	100	5%	1/4W	
R109	1-249-425-11	CARBON	4.7K	5%	1/4W	
R110	1-249-429-11	CARBON	10K	5%	1/4W	
R111	1-249-417-11	CARBON	1K	5%	1/4W	
R112	1-249-432-11	CARBON	18K	5%	1/4W	
R113	1-249-433-11	CARBON	22K	5%	1/4W	
R114	1-215-421-00	METAL	1K	1%	1/6W	
R115	1-215-421-00	METAL	1K	1%	1/6W	
R117	1-249-405-11	CARBON	100	5%	1/4W	
R118	1-249-422-11	CARBON	2.7K	5%	1/4W	
R119	1-215-429-00	METAL	2.2K	1%	1/6W	
R151	1-249-405-11	CARBON	100	5%	1/4W	
R152	1-249-424-11	CARBON	3.9K	5%	1/4W	
R153	1-215-409-00	METAL	330	1%	1/6W	
R154	1-215-380-00	METAL	20	1%	1/6W	
R201	1-249-423-11	CARBON	3.3K	5%	1/4W	
R202	1-249-419-11	CARBON	1.5K	5%	1/4W	
R203	1-249-427-11	CARBON	6.8K	5%	1/4W	
R204	1-249-422-11	CARBON	2.7K	5%	1/4W	
R205	1-249-422-11	CARBON	2.7K	5%	1/4W	

VARIABLE RESISTOR

RV1	1-237-517-21	RES, ADJ, CERMET 5K
RV2	1-237-518-21	RES, ADJ, CERMET 10K
RV3	1-237-516-21	RES, ADJ, CERMET 2K
RV4	1-237-516-21	RES, ADJ, CERMET 2K
RV5	1-237-515-21	RES, ADJ, CERMET 1K
RV6	1-237-515-21	RES, ADJ, CERMET 1K
RV7	1-237-516-21	RES, ADJ, CERMET 2K
RV8	1-237-516-21	RES, ADJ, CERMET 2K
RV9	1-237-515-21	RES, ADJ, CERMET 1K

THERMISTOR

TH1	1-800-202-XX	THERMISTOR S-10K

CRYSTAL

X1	1-567-643-11	VIBRATOR, CRYSTAL

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*A-1135-357-A BC BOARD, COMPLETE (BVM-1315 ONLY)
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*4-353-708-00 HOOK, FINGER

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-102-668-00	CERAMIC	15PF	5%	50V	
C2	1-102-668-00	CERAMIC	15PF	5%	50V	
C3	1-102-947-00	CERAMIC	10PF	0.5PF	50V	
C4	1-101-880-00	CERAMIC	47PF	5%	50V	
C5	1-102-965-00	CERAMIC	39PF	5%	50V	
C6	1-101-004-00	CERAMIC	0.01MF		50V	
C7	1-102-935-00	CERAMIC	2PF	0.25PF	50V	
C8	1-101-361-00	CERAMIC	39PF	5%	50V	
C9	1-123-356-00	ELECT	10MF	20%	16V	
C10	1-123-356-00	ELECT	10MF	20%	16V	
C11	1-101-004-00	CERAMIC	0.01MF		50V	
C12	1-101-004-00	CERAMIC	0.01MF		50V	
C13	1-101-004-00	CERAMIC	0.01MF		50V	
C14	1-101-004-00	CERAMIC	0.01MF		50V	
C15	1-123-332-00	ELECT	47MF	20%	16V	
C16	1-123-332-00	ELECT	47MF	20%	16V	
C17	1-124-963-11	ELECT	33MF	20%	16V	
C18	1-101-004-00	CERAMIC	0.01MF		50V	
C19	1-102-953-00	CERAMIC	18PF	5%	50V	
C20	1-102-668-00	CERAMIC	15PF	5%	50V	
C22	1-101-884-00	CERAMIC	56PF	5%	50V	
C23	1-123-369-00	ELECT	4.7MF	20%	25V	
C24	1-136-157-00	FILM	0.022MF	5%	50V	
C25	1-136-157-00	FILM	0.022MF	5%	50V	
C26	1-101-004-00	CERAMIC	0.01MF		50V	
C27	1-101-004-00	CERAMIC	0.01MF		50V	
C28	1-123-379-00	ELECT	0.47MF	20%	50V	
C29	1-101-004-00	CERAMIC	0.01MF		50V	
C30	1-101-004-00	CERAMIC	0.01MF		50V	
C31	1-124-119-00	ELECT	330MF	20%	16V	
C34	1-109-676-00	MICA	130PF	1%	500V	
C35	1-109-685-00	MICA	330PF	1%	500V	
C36	1-102-960-00	CERAMIC	24PF	5%	50V	
C39	1-109-676-00	MICA	130PF	1%	500V	
C40	1-109-685-00	MICA	330PF	1%	500V	
C41	1-102-960-00	CERAMIC	24PF	5%	50V	
C42	1-101-004-00	CERAMIC	0.01MF		50V	
C50	1-102-942-00	CERAMIC	5PF	0.5PF	50V	
C101	1-124-963-11	ELECT	33MF	20%	16V	
C102	1-101-004-00	CERAMIC	0.01MF		50V	
C103	1-123-343-00	ELECT	33MF	20%	25V	
C104	1-124-963-11	ELECT	33MF	20%	16V	
C105	1-101-004-00	CERAMIC	0.01MF		50V	
C106	1-123-343-00	ELECT	33MF	20%	25V	
C107	1-101-004-00	CERAMIC	0.01MF		50V	
C111	1-124-963-11	ELECT	33MF	20%	16V	
C112	1-124-963-11	ELECT	33MF	20%	16V	
C113	1-124-963-11	ELECT	33MF	20%	16V	
C116	1-101-004-00	CERAMIC	0.01MF		50V	
C117	1-101-004-00	CERAMIC	0.01MF		50V	
C118	1-101-004-00	CERAMIC	0.01MF		50V	
C121	1-124-963-11	ELECT	33MF	20%	16V	
C122	1-124-963-11	ELECT	33MF	20%	16V	
C123	1-124-963-11	ELECT	33MF	20%	16V	
C126	1-101-004-00	CERAMIC	0.01MF		50V	
C127	1-101-004-00	CERAMIC	0.01MF		50V	
C128	1-101-004-00	CERAMIC	0.01MF		50V	
C131	1-124-963-11	ELECT	33MF	20%	16V	
C132	1-124-963-11	ELECT	33MF	20%	16V	
C133	1-124-963-11	ELECT	33MF	20%	16V	
C136	1-101-004-00	CERAMIC	0.01MF		50V	
C137	1-101-004-00	CERAMIC	0.01MF		50V	
C138	1-101-004-00	CERAMIC	0.01MF		50V	
C139	1-101-004-00	CERAMIC	0.01MF		50V	
C143	1-101-004-00	CERAMIC	0.01MF		50V	
C144	1-123-330-00	ELECT	22MF	20%	25V	
C201	1-123-343-00	ELECT	33MF	20%	25V	
C202	1-101-004-00	CERAMIC	0.01MF		50V	

Ref.No.	Part No.	Description				Remark
		TRIMMER				
CV1	1-141-147-XX	CAP, TRIMMER				
CV2	1-141-147-XX	CAP, TRIMMER				
		DIODE				
D1	8-719-911-19	DIODE 1SS119				
D2	8-712-500-00	DIODE 1T25				
D3	8-719-911-19	DIODE 1SS119				
D4	8-719-100-54	DIODE RD9.1E-B2				
D5	8-719-911-19	DIODE 1SS119				
D6	8-719-911-19	DIODE 1SS119				
D7	8-719-911-19	DIODE 1SS119				
		IC				
IC1	8-759-204-21	IC TA7193P				
IC2	8-752-006-10	IC CX20061				
IC3	8-759-140-53	IC UPD4053BC				
		COIL				
L1	1-408-533-00	COIL, VARIABLE				
L2	1-408-513-00	COIL (VARIABLE)				
L3	1-408-533-00	COIL, VARIABLE				
L4	1-408-429-00	INDUCTOR	470UH			
L5	1-408-429-00	INDUCTOR	470UH			
L6	1-408-429-00	INDUCTOR	470UH			
		TRANSISTOR				
Q1	8-729-603-50	TRANSISTOR 2SC403SP				
Q2	8-729-603-50	TRANSISTOR 2SC403SP				
Q3	8-729-603-50	TRANSISTOR 2SC403SP				
Q4	8-729-800-10	TRANSISTOR 2SC3068				
Q5	8-729-800-10	TRANSISTOR 2SC3068				
Q6	8-729-603-50	TRANSISTOR 2SC403SP				
Q7	8-729-603-50	TRANSISTOR 2SC403SP				
Q8	8-729-603-50	TRANSISTOR 2SC403SP				
Q9	8-729-384-48	TRANSISTOR 2SA844				
Q10	8-729-603-50	TRANSISTOR 2SC403SP				
Q11	8-729-384-48	TRANSISTOR 2SA844				
Q12	8-729-603-50	TRANSISTOR 2SC403SP				
Q13	8-729-384-48	TRANSISTOR 2SA844				
Q14	8-729-384-48	TRANSISTOR 2SA844				
Q15	8-729-603-50	TRANSISTOR 2SC403SP				
Q16	8-729-603-50	TRANSISTOR 2SC403SP				
Q17	8-729-603-50	TRANSISTOR 2SC403SP				
Q18	8-729-800-10	TRANSISTOR 2SC3068				
Q19	8-729-603-50	TRANSISTOR 2SC403SP				
Q20	8-729-603-50	TRANSISTOR 2SC403SP				
Q21	8-729-800-10	TRANSISTOR 2SC3068				
Q101	8-729-103-43	TRANSISTOR 2SB734				
Q103	8-729-900-63	TRANSISTOR DTA124ES				
Q104	8-729-900-63	TRANSISTOR DTA124ES				
		RESISTOR				
R1	1-249-428-11	CARBON	8.2K	5%	1/4W	
R2	1-249-429-11	CARBON	10K	5%	1/4W	
R3	1-249-405-11	CARBON	100	5%	1/4W	
R4	1-249-422-11	CARBON	2.7K	5%	1/4W	
R5	1-215-421-00	METAL	1K	1%	1/6W	

Ref.No.	Part No.	Description				Remark
R6	1-215-398-00	METAL	110	1%	1/6W	
R7	1-249-405-11	CARBON	100	5%	1/4W	
R8	1-215-421-00	METAL	1K	1%	1/6W	
R9	1-215-421-00	METAL	1K	1%	1/6W	
R10	1-215-423-00	METAL	1.2K	1%	1/6W	
R11	1-249-405-11	CARBON	100	5%	1/4W	
R12	1-215-425-00	METAL	1.5K	1%	1/6W	
R13	1-215-425-00	METAL	1.5K	1%	1/6W	
R14	1-215-405-00	METAL	220	1%	1/6W	
R15	1-249-405-11	CARBON	100	5%	1/4W	
R16	1-249-433-11	CARBON	22K	5%	1/4W	
R17	1-249-433-11	CARBON	22K	5%	1/4W	
R18	1-249-421-11	CARBON	2.2K	5%	1/4W	
R19	1-249-425-11	CARBON	4.7K	5%	1/4W	
R20	1-249-429-11	CARBON	10K	5%	1/4W	
R22	1-249-429-11	CARBON	10K	5%	1/4W	
R23	1-249-431-11	CARBON	15K	5%	1/4W	
R24	1-249-428-11	CARBON	8.2K	5%	1/4W	
R25	1-249-405-11	CARBON	100	5%	1/4W	
R26	1-249-417-11	CARBON	1K	5%	1/4W	
R27	1-249-405-11	CARBON	100	5%	1/4W	
R28	1-249-417-11	CARBON	1K	5%	1/4W	
R29	1-249-405-11	CARBON	100	5%	1/4W	
R30	1-249-425-11	CARBON	4.7K	5%	1/4W	
R31	1-249-425-11	CARBON	4.7K	5%	1/4W	
R32	1-249-433-11	CARBON	22K	5%	1/4W	
R33	1-249-405-11	CARBON	100	5%	1/4W	
R34	1-215-425-00	METAL	1.5K	1%	1/6W	
R35	1-215-425-00	METAL	1.5K	1%	1/6W	
R36	1-215-425-00	METAL	1.5K	1%	1/6W	
R37	1-215-425-00	METAL	1.5K	1%	1/6W	
R38	1-215-439-00	METAL	5.6K	1%	1/6W	
R39	1-215-469-00	METAL	100K	1%	1/6W	
R40	1-247-903-00	CARBON	1M	5%	1/4W	
R41	1-249-427-11	CARBON	6.8K	5%	1/4W	
R42	1-249-420-11	CARBON	1.8K	5%	1/4W	
R43	1-249-415-11	CARBON	680	5%	1/4W	
R44	1-249-418-11	CARBON	1.2K	5%	1/4W	
R45	1-249-422-11	CARBON	2.7K	5%	1/4W	
R47	1-249-413-11	CARBON	470	5%	1/4W	
R49	1-249-413-11	CARBON	470	5%	1/4W	
R50	1-249-405-11	CARBON	100	5%	1/4W	
R51	1-215-417-00	METAL	680	1%	1/6W	
R52	1-215-417-00	METAL	680	1%	1/6W	
R53	1-215-413-00	METAL	470	1%	1/6W	
R54	1-215-443-00	METAL	8.2K	1%	1/6W	
R55	1-249-421-11	CARBON	2.2K	5%	1/4W	
R56	1-249-441-11	CARBON	100K	5%	1/4W	
R57	1-249-417-11	CARBON	1K	5%	1/4W	
R58	1-249-417-11	CARBON	1K	5%	1/4W	
R59	1-249-429-11	CARBON	10K	5%	1/4W	
R60	1-249-433-11	CARBON	22K	5%	1/4W	
R61	1-249-420-11	CARBON	1.8K	5%	1/4W	
R62	1-249-429-11	CARBON	10K	5%	1/4W	
R63	1-249-425-11	CARBON	4.7K	5%	1/4W	
R64	1-249-429-11	CARBON	10K	5%	1/4W	
R65	1-215-421-00	METAL	1K	1%	1/6W	
R68	1-249-427-11	CARBON	6.8K	5%	1/4W	
R69	1-215-420-00	METAL	910	1%	1/6W	
R70	1-215-420-00	METAL	910	1%	1/6W	
R71	1-215-417-00	METAL	680	1%	1/6W	
R72	1-249-422-11	CARBON	2.7K	5%	1/4W	
R73	1-249-405-11	CARBON	100	5%	1/4W	
R74	1-215-421-00	METAL	1K	1%	1/6W	
R77	1-249-427-11	CARBON	6.8K	5%	1/4W	

BC **BH**

Ref.No.	Part No.	Description				Remark
R78	1-215-420-00	METAL	910	1%	1/6W	
R79	1-215-420-00	METAL	910	1%	1/6W	
R80	1-215-417-00	METAL	680	1%	1/6W	
R81	1-249-422-11	CARBON	2.7K	5%	1/4W	
R82	1-249-405-11	CARBON	100	5%	1/4W	
R83	1-215-481-00	METAL	330K	1%	1/6W	
R85	1-215-429-00	METAL	2.2K	1%	1/6W	
R86	1-215-415-00	METAL	560	1%	1/6W	
R87	1-215-477-00	METAL	220K	1%	1/6W	
R88	1-215-457-00	METAL	33K	1%	1/6W	
R90	1-249-429-11	CARBON	10K	5%	1/4W	
R91	1-249-433-11	CARBON	22K	5%	1/4W	
R95	1-249-429-11	CARBON	10K	5%	1/4W	
R96	1-249-433-11	CARBON	22K	5%	1/4W	
R101	1-249-423-11	CARBON	3.3K	5%	1/4W	
R102	1-249-419-11	CARBON	1.5K	5%	1/4W	
R103	1-249-427-11	CARBON	6.8K	5%	1/4W	
R104	1-249-422-11	CARBON	2.7K	5%	1/4W	
R105	1-249-429-11	CARBON	10K	5%	1/4W	
R202	1-249-429-11	CARBON	10K	5%	1/4W	

VARIABLE RESISTOR

RV1	1-237-500-11	RES, ADJ, CERMET 1K
RV2	1-237-504-21	RES, ADJ, CERMET 20K
RV3	1-237-499-21	RES, ADJ, CERMET 500
RV4	1-237-501-21	RES, ADJ, CERMET 2K
RV5	1-237-501-21	RES, ADJ, CERMET 2K

CRYSTAL

X1	1-567-505-11	OSCILLATOR, CRYSTAL

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*A-1135-359-A BH BOARD, COMPLETE
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*4-353-708-00 HOOK, FINGER

CAPACITOR

C1	1-124-963-11	ELECT	33MF	20%	16V
C2	1-124-963-11	ELECT	33MF	20%	16V
C3	1-124-963-11	ELECT	33MF	20%	16V
C4	1-124-963-11	ELECT	33MF	20%	16V
C5	1-124-963-11	ELECT	33MF	20%	16V
C6	1-124-963-11	ELECT	33MF	20%	16V
C7	1-124-963-11	ELECT	33MF	20%	16V
C8	1-124-963-11	ELECT	33MF	20%	16V
C9	1-124-963-11	ELECT	33MF	20%	16V
C10	1-124-963-11	ELECT	33MF	20%	16V
C11	1-124-963-11	ELECT	33MF	20%	16V
C12	1-124-963-11	ELECT	33MF	20%	16V
C13	1-124-963-11	ELECT	33MF	20%	16V
C14	1-124-963-11	ELECT	33MF	20%	16V
C15	1-101-004-00	CERAMIC	0.01MF		50V
C16	1-101-004-00	CERAMIC	0.01MF		50V
C17	1-101-004-00	CERAMIC	0.01MF		50V
C18	1-101-004-00	CERAMIC	0.01MF		50V
C20	1-123-382-00	ELECT	3.3MF	20%	50V
C21	1-123-356-00	ELECT	10MF	20%	16V
C22	1-123-356-00	ELECT	10MF	20%	16V
C23	1-123-356-00	ELECT	10MF	20%	16V
C24	1-123-356-00	ELECT	10MF	20%	16V
C26	1-101-004-00	CERAMIC	0.01MF		50V
C41	1-123-333-00	ELECT	100MF	20%	16V

Ref.No.	Part No.	Description			Remark
C42	1-123-356-00	ELECT	10MF	20%	16V
C43	1-123-356-00	ELECT	10MF	20%	16V
C44	1-123-356-00	ELECT	10MF	20%	16V
C45	1-123-356-00	ELECT	10MF	20%	16V
C50	1-123-356-00	ELECT	10MF	20%	16V
C51	1-101-004-00	CERAMIC	0.01MF		50V
C52	1-101-004-00	CERAMIC	0.01MF		50V
C53	1-101-004-00	CERAMIC	0.01MF		50V
C54	1-101-004-00	CERAMIC	0.01MF		50V
C55	1-101-004-00	CERAMIC	0.01MF		50V
C71	1-123-333-00	ELECT	100MF	20%	16V
C72	1-123-356-00	ELECT	10MF	20%	16V
C73	1-123-356-00	ELECT	10MF	20%	16V
C74	1-123-356-00	ELECT	10MF	20%	16V
C80	1-123-356-00	ELECT	10MF	20%	16V
C81	1-101-004-00	CERAMIC	0.01MF		50V
C82	1-101-004-00	CERAMIC	0.01MF		50V
C83	1-101-004-00	CERAMIC	0.01MF		50V
C84	1-101-004-00	CERAMIC	0.01MF		50V
C85	1-101-004-00	CERAMIC	0.01MF		50V
C86	1-101-004-00	CERAMIC	0.01MF		50V
C101	1-161-021-11	CERAMIC	0.047MF	10%	25V
C102	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C103	1-102-959-00	CERAMIC	22PF	5%	50V
C104	1-123-356-00	ELECT	10MF	20%	16V
C105	1-161-021-11	CERAMIC	0.047MF	10%	25V
C106	1-101-004-00	CERAMIC	0.01MF		50V
C107	1-161-021-11	CERAMIC	0.047MF	10%	25V
C108	1-101-004-00	CERAMIC	0.01MF		50V
C109	1-101-004-00	CERAMIC	0.01MF		50V
C110	1-101-880-00	CERAMIC	47PF	5%	50V
C201	1-161-021-11	CERAMIC	0.047MF	10%	25V
C202	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C203	1-102-959-00	CERAMIC	22PF	5%	50V
C204	1-123-356-00	ELECT	10MF	20%	16V
C205	1-161-021-11	CERAMIC	0.047MF	10%	25V
C206	1-101-004-00	CERAMIC	0.01MF		50V
C207	1-161-021-11	CERAMIC	0.047MF	10%	25V
C208	1-101-004-00	CERAMIC	0.01MF		50V
C209	1-101-004-00	CERAMIC	0.01MF		50V
C210	1-101-880-00	CERAMIC	47PF	5%	50V
C301	1-161-021-11	CERAMIC	0.047MF	10%	25V
C302	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C303	1-102-959-00	CERAMIC	22PF	5%	50V
C304	1-123-356-00	ELECT	10MF	20%	16V
C305	1-161-021-11	CERAMIC	0.047MF	10%	25V
C306	1-101-004-00	CERAMIC	0.01MF		50V
C307	1-161-021-11	CERAMIC	0.047MF	10%	25V
C308	1-101-004-00	CERAMIC	0.01MF		50V
C309	1-101-004-00	CERAMIC	0.01MF		50V
C310	1-101-880-00	CERAMIC	47PF	5%	50V

DIODE

D1	8-719-911-19	DIODE 1SS119
D101	8-719-911-19	DIODE 1SS119
D102	8-719-911-19	DIODE 1SS119
D201	8-719-911-19	DIODE 1SS119
D202	8-719-911-19	DIODE 1SS119
D301	8-719-911-19	DIODE 1SS119
D302	8-719-911-19	DIODE 1SS119

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-240-53	IC TC4053BP	
IC2	8-759-240-53	IC TC4053BP	
IC3	8-759-240-53	IC TC4053BP	
IC4	8-759-240-53	IC TC4053BP	
IC5	8-759-700-08	IC NJM4558S	
IC6	8-759-700-08	IC NJM4558S	
IC7	8-759-800-81	IC LA7016	
IC8	8-759-800-81	IC LA7016	
IC9	8-759-140-53	IC UPD4053BC	
IC10	8-759-140-53	IC UPD4053BC	
IC11	8-759-140-81	IC UPD4081BC	
IC12	8-759-140-81	IC UPD4081BC	
IC13	8-759-140-01	IC UPD4001BC	
IC14	8-759-240-30	IC TC4030BP	
IC101	8-769-401-89	TRANSISTOR TX-429M	
IC102	8-759-990-82	IC TL082CP	
IC201	8-769-401-89	TRANSISTOR TX-429M	
IC202	8-759-990-82	IC TL082CP	
IC301	8-769-401-89	TRANSISTOR TX-429M	
IC302	8-759-990-82	IC TL082CP	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-603-50	TRANSISTOR 2SC403SP	
Q2	8-729-105-71	TRANSISTOR 2SK523-K2	
Q3	8-729-384-48	TRANSISTOR 2SA844	
Q4	8-729-603-50	TRANSISTOR 2SC403SP	
Q5	8-729-105-71	TRANSISTOR 2SK523-K2	
Q6	8-729-384-48	TRANSISTOR 2SA844	
Q7	8-729-603-50	TRANSISTOR 2SC403SP	
Q8	8-729-105-71	TRANSISTOR 2SK523-K2	
Q9	8-729-384-48	TRANSISTOR 2SA844	
Q10	8-729-603-50	TRANSISTOR 2SC403SP	
Q11	8-729-105-71	TRANSISTOR 2SK523-K2	
Q12	8-729-384-48	TRANSISTOR 2SA844	
Q13	8-729-384-48	TRANSISTOR 2SA844	
Q14	8-729-384-48	TRANSISTOR 2SA844	
Q15	8-729-384-48	TRANSISTOR 2SA844	
Q16	8-729-800-10	TRANSISTOR 2SC3068	
Q101	8-729-601-47	TRANSISTOR 2SK381-B	
Q102	8-729-384-48	TRANSISTOR 2SA844	
Q103	8-729-603-50	TRANSISTOR 2SC403SP	
Q104	8-729-603-50	TRANSISTOR 2SC403SP	
Q105	8-729-603-50	TRANSISTOR 2SC403SP	
Q106	8-729-601-47	TRANSISTOR 2SK381-B	
Q107	8-729-601-47	TRANSISTOR 2SK381-B	
Q108	8-729-601-47	TRANSISTOR 2SK381-B	
Q201	8-729-601-47	TRANSISTOR 2SK381-B	
Q202	8-729-384-48	TRANSISTOR 2SA844	
Q203	8-729-603-50	TRANSISTOR 2SC403SP	
Q204	8-729-603-50	TRANSISTOR 2SC403SP	
Q205	8-729-603-50	TRANSISTOR 2SC403SP	
Q206	8-729-601-47	TRANSISTOR 2SK381-B	
Q207	8-729-601-47	TRANSISTOR 2SK381-B	
Q208	8-729-601-47	TRANSISTOR 2SK381-B	
Q301	8-729-601-47	TRANSISTOR 2SK381-B	
Q302	8-729-384-48	TRANSISTOR 2SA844	
Q303	8-729-603-50	TRANSISTOR 2SC403SP	
Q304	8-729-603-50	TRANSISTOR 2SC403SP	
Q305	8-729-603-50	TRANSISTOR 2SC403SP	
Q306	8-729-601-47	TRANSISTOR 2SK381-B	
Q307	8-729-601-47	TRANSISTOR 2SK381-B	
Q308	8-729-601-47	TRANSISTOR 2SK381-B	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-433-11	CARBON	22K	5%	1/4W	
R3	1-249-427-11	CARBON	6.8K	5%	1/4W	
R5	1-249-422-11	CARBON	2.7K	5%	1/4W	
R6	1-249-433-11	CARBON	22K	5%	1/4W	
R7	1-249-433-11	CARBON	22K	5%	1/4W	
R9	1-249-427-11	CARBON	6.8K	5%	1/4W	
R11	1-249-422-11	CARBON	2.7K	5%	1/4W	
R12	1-249-433-11	CARBON	22K	5%	1/4W	
R13	1-249-433-11	CARBON	22K	5%	1/4W	
R15	1-249-427-11	CARBON	6.8K	5%	1/4W	
R17	1-249-422-11	CARBON	2.7K	5%	1/4W	
R18	1-249-433-11	CARBON	22K	5%	1/4W	
R19	1-249-433-11	CARBON	22K	5%	1/4W	
R21	1-249-427-11	CARBON	6.8K	5%	1/4W	
R23	1-249-422-11	CARBON	2.7K	5%	1/4W	
R31	1-249-405-11	CARBON	100	5%	1/4W	
R32	1-249-405-11	CARBON	100	5%	1/4W	
R33	1-249-433-11	CARBON	22K	5%	1/4W	
R34	1-249-422-11	CARBON	2.7K	5%	1/4W	
R35	1-249-405-11	CARBON	100	5%	1/4W	
R36	1-249-405-11	CARBON	100	5%	1/4W	
R37	1-249-433-11	CARBON	22K	5%	1/4W	
R38	1-249-422-11	CARBON	2.7K	5%	1/4W	
R39	1-249-433-11	CARBON	22K	5%	1/4W	
R40	1-249-422-11	CARBON	2.7K	5%	1/4W	
R52	1-249-417-11	CARBON	1K	5%	1/4W	
R53	1-249-425-11	CARBON	4.7K	5%	1/4W	
R54	1-249-441-11	CARBON	100K	5%	1/4W	
R63	1-249-417-11	CARBON	1K	5%	1/4W	
R64	1-249-437-11	CARBON	47K	5%	1/4W	
R65	1-249-433-11	CARBON	22K	5%	1/4W	
R66	1-249-417-11	CARBON	1K	5%	1/4W	
R101	1-247-903-00	CARBON	1M	5%	1/4W	
R102	1-249-431-11	CARBON	15K	5%	1/4W	
R103	1-249-419-11	CARBON	1.5K	5%	1/4W	
R104	1-249-430-11	CARBON	12K	5%	1/4W	
R105	1-249-409-11	CARBON	220	5%	1/4W	
R106	1-249-419-11	CARBON	1.5K	5%	1/4W	
R107	1-215-425-00	METAL	1.5K	1%	1/6W	
R108	1-249-415-11	CARBON	680	5%	1/4W	
R109	1-249-419-11	CARBON	1.5K	5%	1/4W	
R110	1-215-427-00	METAL	1.8K	1%	1/6W	
R111	1-215-453-00	METAL	22K	1%	1/6W	
R112	1-249-419-11	CARBON	1.5K	5%	1/4W	
R113	1-249-405-11	CARBON	100	5%	1/4W	
R114	1-215-445-00	METAL	10K	1%	1/6W	
R115	1-215-445-00	METAL	10K	1%	1/6W	
R116	1-249-429-11	CARBON	10K	5%	1/4W	
R117	1-215-493-00	METAL	1M	1%	1/6W	
R120	1-215-451-00	METAL	18K	1%	1/6W	
R121	1-215-453-00	METAL	22K	1%	1/6W	
R201	1-247-903-00	CARBON	1M	5%	1/4W	
R202	1-249-431-11	CARBON	15K	5%	1/4W	
R203	1-249-419-11	CARBON	1.5K	5%	1/4W	
R204	1-249-430-11	CARBON	12K	5%	1/4W	
R205	1-249-409-11	CARBON	220	5%	1/4W	
R206	1-249-419-11	CARBON	1.5K	5%	1/4W	
R207	1-215-425-00	METAL	1.5K	1%	1/6W	
R208	1-249-415-11	CARBON	680	5%	1/4W	
R209	1-249-419-11	CARBON	1.5K	5%	1/4W	
R210	1-215-427-00	METAL	1.8K	1%	1/6W	

BH BJ

Ref.No.	Part No.	Description				Remark
R211	1-215-453-00	METAL	22K	1%	1/6W	
R212	1-249-419-11	CARBON	1.5K	5%	1/4W	
R213	1-249-405-11	CARBON	100	5%	1/4W	
R214	1-215-445-00	METAL	10K	1%	1/6W	
R215	1-215-445-00	METAL	10K	1%	1/6W	
R216	1-249-429-11	CARBON	10K	5%	1/4W	
R217	1-215-455-00	METAL	27K	1%	1/6W	
R301	1-247-903-00	CARBON	1M	5%	1/4W	
R302	1-249-431-11	CARBON	15K	5%	1/4W	
R303	1-249-419-11	CARBON	1.5K	5%	1/4W	
R304	1-249-430-11	CARBON	12K	5%	1/4W	
R305	1-249-409-11	CARBON	220	5%	1/4W	
R306	1-249-419-11	CARBON	1.5K	5%	1/4W	
R307	1-215-425-00	METAL	1.5K	1%	1/6W	
R308	1-249-415-11	CARBON	680	5%	1/4W	
R309	1-249-419-11	CARBON	1.5K	5%	1/4W	
R310	1-215-427-00	METAL	1.8K	1%	1/6W	
R311	1-215-453-00	METAL	22K	1%	1/6W	
R312	1-249-419-11	CARBON	1.5K	5%	1/4W	
R313	1-249-405-11	CARBON	100	5%	1/4W	
R314	1-215-445-00	METAL	10K	1%	1/6W	
R315	1-215-445-00	METAL	10K	1%	1/6W	
R316	1-249-429-11	CARBON	10K	5%	1/4W	

VARIABLE RESISTOR

RV1	1-237-505-21	RES, ADJ, CERMET 50K
RV2	1-237-505-21	RES, ADJ, CERMET 50K
RV3	1-237-505-21	RES, ADJ, CERMET 50K

SWITCH

S1	1-554-076-21	SWITCH, SLIDE
S2	1-554-075-21	SWITCH, SLIDE

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*A-1135-361-A BJ BOARD, COMPLETE
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*4-353-708-00 HOOK, FINGER

CAPACITOR

Ref.No.	Part No.	Description			Remark
C1	1-101-361-00	CERAMIC	150PF	5%	50V
C2	1-101-361-00	CERAMIC	150PF	5%	50V
C4	1-102-821-00	CERAMIC	360PF	5%	50V
C5	1-130-473-00	MYLAR	0.0015MF	5%	50V
C11	1-104-302-11	POLYSTYRENE	0.001MF	5%	50V
C12	1-101-888-00	CERAMIC	68PF	5%	50V
C14	1-101-888-00	CERAMIC	68PF	5%	50V
C15	1-101-888-00	CERAMIC	68PF	5%	50V
C16	1-101-888-00	CERAMIC	68PF	5%	50V
C17	1-101-888-00	CERAMIC	68PF	5%	50V
C18	1-104-302-11	POLYSTYRENE	0.001MF	5%	50V
C19	1-102-973-00	CERAMIC	100PF	5%	50V
C20	1-101-888-00	CERAMIC	68PF	5%	50V
C21	1-101-361-00	CERAMIC	150PF	5%	50V
C22	1-101-890-00	CERAMIC	75PF	5%	50V
C23	1-102-965-00	CERAMIC	39PF	5%	50V
C25	1-102-811-91	CERAMIC	9PF	1PF	50V
C26	1-102-944-00	CERAMIC	7PF	1PF	50V
C27	1-101-361-00	CERAMIC	150PF	5%	50V
C28	1-130-471-00	MYLAR	0.001MF	5%	50V
C29	1-130-471-00	MYLAR	0.001MF	5%	50V
C30	1-101-004-00	CERAMIC	0.01MF		50V
C31	1-101-361-00	CERAMIC	150PF	5%	50V
C32	1-101-361-00	CERAMIC	150PF	5%	50V
C33	1-101-361-00	CERAMIC	150PF	5%	50V
C34	1-101-361-00	CERAMIC	150PF	5%	50V
C35	1-130-471-00	MYLAR	0.001MF	5%	50V
C36	1-102-824-00	CERAMIC	470PF	5%	50V
C37	1-123-380-00	ELECT	1MF	20%	50V
C38	1-101-004-00	CERAMIC	0.01MF		50V
C39	1-101-004-00	CERAMIC	0.01MF		50V
C40	1-102-074-00	CERAMIC	0.001MF	10%	50V
C61	1-101-888-00	CERAMIC	68PF	5%	50V
C62	1-101-880-00	CERAMIC	47PF	5%	50V
C63	1-101-888-00	CERAMIC	68PF	5%	50V
C64	1-101-88-000	CERAMIC	47PF	5%	50V
C65	1-102-820-00	CERAMIC	330PF	5%	50V
C66	1-101-004-00	CERAMIC	0.01MF		50V
C67	1-101-880-00	CERAMIC	47PF	5%	50V
C100	1-123-332-00	ELECT	47MF	20%	16V
C102	1-124-963-11	ELECT	33MF	20%	16V
C106	1-101-004-00	CERAMIC	0.01MF		50V
C108	1-124-963-11	ELECT	33MF	20%	16V
C109	1-101-004-00	CERAMIC	0.01MF		50V
C110	1-101-004-00	CERAMIC	0.01MF		50V
C111	1-101-004-00	CERAMIC	0.01MF		50V
C112	1-101-004-00	CERAMIC	0.01MF		50V
C113	1-101-004-00	CERAMIC	0.01MF		50V
C114	1-123-356-00	ELECT	10MF	20%	16V
C115	1-101-004-00	CERAMIC	0.01MF		50V
C116	1-101-004-00	CERAMIC	0.01MF		50V
C117	1-101-004-00	CERAMIC	0.01MF		50V
C118	1-123-356-00	ELECT	10MF	20%	16V
C120	1-101-004-00	CERAMIC	0.01MF		50V
C121	1-101-004-00	CERAMIC	0.01MF		50V
C122	1-101-004-00	CERAMIC	0.01MF		50V
C130	1-124-963-11	ELECT	33MF	20%	16V

DIODE

D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D3	8-719-911-19	DIODE 1SS119
D7	8-719-911-19	DIODE 1SS119
D8	8-719-911-19	DIODE 1SS119
D9	8-719-911-19	DIODE 1SS119
D11	8-719-000-12	DIODE MC931

IC

IC1	8-759-345-38	IC HD14538BP
IC2	8-759-140-01	IC UPD4001BC
IC3	8-759-240-40	IC TC4040BP
IC4	8-759-240-40	IC TC4040BP
IC5	8-759-205-77	IC TC504027BP
IC6	8-759-205-77	IC TC504027BP
IC7	8-759-205-77	IC TC504027BP
IC8	8-759-205-77	IC TC504027BP
IC9	8-759-205-77	IC TC504027BP
IC10	8-759-345-38	IC HD14538BP
IC11	8-759-345-38	IC HD14538BP
IC12	8-759-345-38	IC HD14538BP
IC13	8-759-140-01	IC UPD4001BC
IC14	8-759-140-01	IC UPD4001BC
IC15	8-759-240-71	IC TC4071BPC
IC16	8-759-340-11	IC HD14011BP
IC17	8-759-340-11	IC HD14011BP

Ref.No.	Part No.	Description	Remark
IC18	8-759-240-23	IC TC4023BP	
IC19	8-759-140-81	IC UPD4081BC	
IC20	8-759-140-81	IC UPD4081BC	
IC21	8-759-240-71	IC TC4071BPC	
IC22	8-759-240-71	IC TC4071BPC	
IC23	8-759-240-73	IC TC4073BP	
IC24	8-759-140-69	IC UPD4069UBC	
IC25	8-759-140-69	IC UPD4069UBC	
IC26	8-759-241-75	IC TC40175BP	
IC27	8-759-140-53	IC UPD4053BC	
IC28	8-759-208-04	IC TC4520BPHB	
IC29	8-759-345-38	IC HD14538BP	

COIL

Ref.No.	Part No.	Description	Remark
L1	1-408-098-00	INDUCTOR 560UH	
L2	1-407-717-00	INDUCTOR 1MMH	
L3	1-407-715-00	INDUCTOR 680UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q14	8-729-178-54	TRANSISTOR 2SC2785	
Q15	8-729-178-54	TRANSISTOR 2SC2785	
Q16	8-729-178-54	TRANSISTOR 2SC2785	
Q17	8-729-178-54	TRANSISTOR 2SC2785	
Q18	8-729-178-54	TRANSISTOR 2SC2785	
Q19	8-729-611-53	TRANSISTOR 2SA1115-F	
Q20	8-729-178-54	TRANSISTOR 2SC2785	
Q21	8-729-178-54	TRANSISTOR 2SC2785	
Q22	8-729-178-54	TRANSISTOR 2SC2785	
Q23	8-729-600-60	TRANSISTOR 2SA1115P	
Q24	8-729-178-54	TRANSISTOR 2SC2785	
Q25	8-729-178-54	TRANSISTOR 2SC2785	
Q26	8-729-178-54	TRANSISTOR 2SC2785	

RESISTOR

Ref.No.	Part No.	Description	Remark
R2	1-215-439-00	METAL 5.6K 1% 1/6W	
R3	1-249-422-11	CARBON 2.7K 5% 1/4W	
R4	1-215-449-00	METAL 15K 1% 1/6W	
R5	1-249-441-11	CARBON 100K 5% 1/4W	
R6	1-249-425-11	CARBON 4.7K 5% 1/4W	
R7	1-215-439-00	METAL 5.6K 1% 1/6W	
R37	1-249-441-11	CARBON 100K 5% 1/4W	
R38	1-215-454-00	METAL 24K 1% 1/6W	
R39	1-249-422-11	CARBON 2.7K 5% 1/4W	
R42	1-249-433-11	CARBON 22K 5% 1/4W	
R43	1-247-876-11	CARBON 75K 5% 1/4W	
R44	1-249-429-11	CARBON 10K 5% 1/4W	
R45	1-249-441-11	CARBON 100K 5% 1/4W	
R46	1-249-441-11	CARBON 100K 5% 1/4W	
R47	1-247-862-11	CARBON 20K 5% 1/4W	
R48	1-215-467-00	METAL 82K 1% 1/6W	
R49	1-249-422-11	CARBON 2.7K 5% 1/4W	
R50	1-215-469-00	METAL 100K 1% 1/6W	
R51	1-215-445-00	METAL 10K 1% 1/6W	
R52	1-247-885-00	CARBON 180K 5% 1/4W	
R53	1-215-449-00	METAL 15K 1% 1/6W	
R54	1-249-422-11	CARBON 2.7K 5% 1/4W	
R56	1-249-434-11	CARBON 27K 5% 1/4W	
R57	1-249-422-11	CARBON 2.7K 5% 1/4W	
R58	1-249-425-11	CARBON 4.7K 5% 1/4W	
R59	1-247-836-11	CARBON 1.6K 5% 1/4W	
R60	1-249-427-11	CARBON 6.8K 5% 1/4W	
R61	1-215-449-00	METAL 15K 1% 1/6W	
R62	1-249-433-11	CARBON 22K 5% 1/4W	
R63	1-249-425-11	CARBON 4.7K 5% 1/4W	
R64	1-249-425-11	CARBON 4.7K 5% 1/4W	
R65	1-249-417-11	CARBON 1K 5% 1/4W	
R66	1-249-430-11	CARBON 12K 5% 1/4W	
R67	1-249-425-11	CARBON 4.7K 5% 1/4W	
R68	1-249-433-11	CARBON 22K 5% 1/4W	
R69	1-249-425-11	CARBON 4.7K 5% 1/4W	
R70	1-249-417-11	CARBON 1K 5% 1/4W	
R71	1-249-430-11	CARBON 12K 5% 1/4W	
R72	1-249-433-11	CARBON 22K 5% 1/4W	
R74	1-249-430-11	CARBON 12K 5% 1/4W	
R75	1-249-422-11	CARBON 2.7K 5% 1/4W	
R76	1-215-463-00	METAL 56K 1% 1/6W	
R77	1-215-475-00	METAL 180K 1% 1/6W	
R78	1-215-439-00	METAL 5.6K 1% 1/6W	
R79	1-249-425-11	CARBON 4.7K 5% 1/4W	
R80	1-249-433-11	CARBON 22K 5% 1/4W	
R81	1-249-425-11	CARBON 4.7K 5% 1/4W	
R82	1-249-415-11	CARBON 680 5% 1/4W	
R83	1-249-417-11	CARBON 1K 5% 1/4W	
R85	1-249-430-11	CARBON 12K 5% 1/4W	
R87	1-249-422-11	CARBON 2.7K 5% 1/4W	
R89	1-247-887-00	CARBON 220K 5% 1/4W	
R90	1-249-441-11	CARBON 100K 5% 1/4W	
R91	1-249-441-11	CARBON 100K 5% 1/4W	
R92	1-249-441-11	CARBON 100K 5% 1/4W	
R93	1-249-429-11	CARBON 10K 5% 1/4W	
R94	1-249-429-11	CARBON 10K 5% 1/4W	
R95	1-249-441-11	CARBON 100K 5% 1/4W	
R96	1-249-417-11	CARBON 1K 5% 1/4W	
R100	1-249-423-11	CARBON 3.3K 5% 1/4W	
R111	1-249-427-11	CARBON 6.8K 5% 1/4W	
R112	1-249-429-11	CARBON 10K 5% 1/4W	
R113	1-249-429-11	CARBON 10K 5% 1/4W	
R114	1-249-422-11	CARBON 2.7K 5% 1/4W	
R115	1-249-419-11	CARBON 1.5K 5% 1/4W	
R116	1-249-427-11	CARBON 6.8K 5% 1/4W	
R117	1-249-429-11	CARBON 10K 5% 1/4W	
R118	1-249-429-11	CARBON 10K 5% 1/4W	
R119	1-249-422-11	CARBON 2.7K 5% 1/4W	
R120	1-249-419-11	CARBON 1.5K 5% 1/4W	
R121	1-249-417-11	CARBON 1K 5% 1/4W	
R122	1-249-417-11	CARBON 1K 5% 1/4W	
R123	1-249-413-11	CARBON 470 5% 1/4W	
R124	1-249-417-11	CARBON 1K 5% 1/4W	
R125	1-249-417-11	CARBON 1K 5% 1/4W	
R126	1-249-417-11	CARBON 1K 5% 1/4W	
R127	1-249-417-11	CARBON 1K 5% 1/4W	
R128	1-249-417-11	CARBON 1K 5% 1/4W	
R129	1-249-417-11	CARBON 1K 5% 1/4W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV1	1-237-504-21	RES, ADJ, CERMET 20K	
RV3	1-237-504-21	RES, ADJ, CERMET 20K	
RV4	1-237-503-21	RES, ADJ, CERMET 10K	
RV5	1-237-506-21	RES, ADJ, CERMET 100K	
RV6	1-237-505-21	RES, ADJ, CERMET 50K	
RV7	1-237-504-21	RES, ADJ, CERMET 20K	
RV8	1-237-504-21	RES, ADJ, CERMET 20K	
RV9	1-237-505-21	RES, ADJ, CERMET 50K	

SWITCH

Ref.No.	Part No.	Description			Remark
S1	1-554-076-21	SWITCH, SLIDE			

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Ref.No.	Part No.	Description			Remark
	*A-1135-522-A	BI BOARD, COMPLETE ******************			
	*4-353-708-00	HOOK, FINGER			

CAPACITOR

Ref.No.	Part No.	Description			Remark
C1	1-130-481-00	MYLAR	0.0068MF	5%	50V
C2	1-136-165-00	FILM	0.1MF	5%	50V
C3	1-123-369-00	ELECT	4.7MF	20%	25V
C4	1-123-369-00	ELECT	4.7MF	20%	25V
C5	1-102-973-00	CERAMIC	100PF	5%	50V
C7	1-123-330-00	ELECT	22MF	20%	25V
C8	1-123-369-00	ELECT	4.7MF	20%	25V
C11	1-123-356-00	ELECT	10MF	20%	16V
C12	1-101-004-00	CERAMIC	0.01MF		50V
C13	1-101-004-00	CERAMIC	0.01MF		50V
C14	1-101-004-00	CERAMIC	0.01MF		50V
C15	1-123-330-00	ELECT	22MF	20%	16V
C16	1-123-356-00	ELECT	10MF	20%	16V
C17	1-101-004-00	CERAMIC	0.01MF		50V
C18	1-101-004-00	CERAMIC	0.01MF		50V
C19	1-101-004-00	CERAMIC	0.01MF		50V
C41	1-124-963-11	ELECT	33MF	20%	16V
C42	1-124-963-11	ELECT	33MF	20%	16V
C43	1-124-963-11	ELECT	33MF	20%	16V
C44	1-124-963-11	ELECT	33MF	20%	16V
C45	1-124-963-11	ELECT	33MF	20%	16V
C46	1-124-963-11	ELECT	33MF	20%	16V
C51	1-101-004-00	CERAMIC	0.01MF		50V
C52	1-101-004-00	CERAMIC	0.01MF		50V
C53	1-101-004-00	CERAMIC	0.01MF		50V
C54	1-101-004-00	CERAMIC	0.01MF		50V
C55	1-101-004-00	CERAMIC	0.01MF		50V
C56	1-101-004-00	CERAMIC	0.01MF		50V
C57	1-101-004-00	CERAMIC	0.01MF		50V
C71	1-124-963-11	ELECT	33MF	20%	16V
C72	1-124-963-11	ELECT	33MF	20%	16V
C73	1-124-963-11	ELECT	33MF	20%	16V
C74	1-124-963-11	ELECT	33MF	20%	16V
C75	1-124-963-11	ELECT	33MF	20%	16V
C76	1-124-963-11	ELECT	33MF	20%	16V
C81	1-101-004-00	CERAMIC	0.01MF		50V
C82	1-101-004-00	CERAMIC	0.01MF		50V
C83	1-101-004-00	CERAMIC	0.01MF		50V
C84	1-101-004-00	CERAMIC	0.01MF		50V
C85	1-101-004-00	CERAMIC	0.01MF		50V
C86	1-101-004-00	CERAMIC	0.01MF		50V
C87	1-101-004-00	CERAMIC	0.01MF		50V
C101	1-101-004-00	CERAMIC	0.01MF		50V
C102	1-123-380-00	ELECT	1MF	20%	50V
C104	1-123-356-00	ELECT	10MF	20%	16V
C105	1-101-004-00	CERAMIC	0.01MF		50V
C106	1-136-161-00	FILM	0.047MF	5%	50V
C107	1-102-937-00	CERAMIC	4PF	0.25PF	50V
C108	1-101-880-00	CERAMIC	47PF	5%	50V
C109	1-136-161-00	FILM	0.047MF	5%	50V
C110	1-136-161-00	FILM	0.047MF	5%	50V
C114	1-102-951-00	CERAMIC	15PF	5%	50V
C115	1-136-153-00	FILM	0.01MF	5%	50V
C116	1-102-973-00	CERAMIC	100PF	5%	50V
C117	1-101-004-00	CERAMIC	0.01MF		50V
C118	1-101-004-00	CERAMIC	0.01MF		50V
C119	1-102-953-00	CERAMIC	18PF	5%	50V
C120	1-102-973-00	CERAMIC	100PF	5%	50V
C122	1-102-961-00	CERAMIC	27PF	5%	50V
C201	1-101-004-00	CERAMIC	0.01MF		50V
C202	1-123-380-00	ELECT	1MF	20%	50V
C204	1-123-356-00	ELECT	10MF	20%	16V
C205	1-101-004-00	CERAMIC	0.01MF		50V
C206	1-136-161-00	FILM	0.047MF	5%	50V
C207	1-102-937-00	CERAMIC	4PF	0.25PF	50V
C208	1-101-880-00	CERAMIC	47PF	5%	50V
C209	1-136-161-00	FILM	0.047MF	5%	50V
C210	1-136-161-00	FILM	0.047MF	5%	50V
C214	1-102-951-00	CERAMIC	15PF	5%	50V
C215	1-136-153-00	FILM	0.01MF	5%	50V
C216	1-102-973-00	CERAMIC	100PF	5%	50V
C217	1-101-004-00	CERAMIC	0.01MF		50V
C218	1-101-004-00	CERAMIC	0.01MF		50V
C219	1-102-953-00	CERAMIC	18PF	5%	50V
C220	1-102-973-00	CERAMIC	100PF	5%	50V
C222	1-102-961-00	CERAMIC	27PF	5%	50V
C301	1-101-004-00	CERAMIC	0.01MF		50V
C302	1-123-380-00	ELECT	1MF	20%	50V
C304	1-123-356-00	ELECT	10MF	20%	16V
C305	1-101-004-00	CERAMIC	0.01MF		50V
C306	1-136-161-00	FILM	0.047MF	5%	50V
C307	1-102-937-00	CERAMIC	4PF	0.25PF	50V
C308	1-101-880-00	CERAMIC	47PF	5%	50V
C309	1-136-161-00	FILM	0.047MF	5%	50V
C310	1-136-161-00	FILM	0.047MF	5%	50V
C314	1-102-951-00	CERAMIC	15PF	5%	50V
C315	1-136-153-00	FILM	0.01MF	5%	50V
C316	1-102-973-00	CERAMIC	100PF	5%	50V
C317	1-101-004-00	CERAMIC	0.01MF		50V
C318	1-101-004-00	CERAMIC	0.01MF		50V
C319	1-102-953-00	CERAMIC	18PF	5%	50V
C320	1-102-973-00	CERAMIC	100PF	5%	50V
C322	1-102-961-00	CERAMIC	27PF	5%	50V

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D4	8-719-911-19	DIODE 1SS119	
D5	8-719-911-19	DIODE 1SS119	
D6	8-719-110-31	DIODE RD12ES-B2	
D7	8-719-911-19	DIODE 1SS119	
D8	8-719-911-19	DIODE 1SS119	
D101	8-719-911-19	DIODE 1SS119	
D102	8-719-000-12	DIODE MC931	
D103	8-719-109-73	DIODE RD4.3ES-B	
D104	8-719-911-19	DIODE 1SS119	
D105	8-719-109-91	DIODE RD6.2ES-B	
D201	8-719-911-19	DIODE 1SS119	
D202	8-719-000-12	DIODE MC931	
D203	8-719-109-73	DIODE RD4.3ES-B	
D204	8-719-911-19	DIODE 1SS119	
D205	8-719-109-91	DIODE RD6.2ES-B	
D301	8-719-911-19	DIODE 1SS119	
D302	8-719-000-12	DIODE MC931	
D303	8-719-109-73	DIODE RD4.3ES-B	

Ref.No.	Part No.	Description	Remark
D304	8-719-911-19	DIODE 1SS119	
D305	8-719-109-91	DIODE RD6.2ES-B	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-145-58	IC UPC4558C	
IC101	8-759-240-53	IC TC4053BP	
IC102	8-769-401-89	TRANSISTOR TX-429M	
IC103	8-759-990-82	IC TL082CP	
IC104	8-759-990-82	IC TL082CP	
IC105	8-759-990-82	IC TL082CP	
IC201	8-759-240-53	IC TC4053BP	
IC202	8-769-401-89	TRANSISTOR TX-429M	
IC203	8-759-990-82	IC TL082CP	
IC204	8-759-990-82	IC TL082CP	
IC205	8-759-990-82	IC TL082CP	
IC301	8-759-240-53	IC TC4053BP	
IC302	8-769-401-89	TRANSISTOR TX-429M	
IC303	8-759-990-82	IC TL082CP	
IC304	8-759-990-82	IC TL082CP	
IC305	8-759-990-82	IC TL082CP	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-900-74	TRANSISTOR DTC143TS	
Q2	8-729-603-50	TRANSISTOR 2SC403SP	
Q3	8-729-603-50	TRANSISTOR 2SC403SP	
Q11	8-729-201-04	TRANSISTOR 2SC2878	
Q12	8-729-201-04	TRANSISTOR 2SC2878	
Q13	8-729-201-04	TRANSISTOR 2SC2878	
Q14	8-729-201-04	TRANSISTOR 2SC2878	
Q15	8-729-900-65	TRANSISTOR DTA144ES	
Q101	8-729-384-48	TRANSISTOR 2SA844	
Q102	8-729-384-48	TRANSISTOR 2SA844	
Q103	8-729-384-48	TRANSISTOR 2SA844	
Q105	8-729-601-47	TRANSISTOR 2SK381-B	
Q106	8-729-384-48	TRANSISTOR 2SA844	
Q107	8-729-266-83	TRANSISTOR 2SC2668	
Q108	8-729-384-48	TRANSISTOR 2SA844	
Q109	8-729-601-47	TRANSISTOR 2SK381-B	
Q110	8-729-601-47	TRANSISTOR 2SK381-B	
Q113	8-729-601-47	TRANSISTOR 2SK381-B	
Q114	8-729-200-17	TRANSISTOR 2SA1091	
Q201	8-729-384-48	TRANSISTOR 2SA844	
Q202	8-729-384-48	TRANSISTOR 2SA844	
Q203	8-729-384-48	TRANSISTOR 2SA844	
Q205	8-729-601-47	TRANSISTOR 2SK381-B	
Q206	8-729-384-48	TRANSISTOR 2SA844	
Q207	8-729-266-83	TRANSISTOR 2SC2668	
Q208	8-729-384-48	TRANSISTOR 2SA844	
Q209	8-729-601-47	TRANSISTOR 2SK381-B	
Q210	8-729-601-47	TRANSISTOR 2SK381-B	
Q213	8-729-601-47	TRANSISTOR 2SK381-B	
Q214	8-729-200-17	TRANSISTOR 2SA1091	
Q301	8-729-384-48	TRANSISTOR 2SA844	
Q302	8-729-384-48	TRANSISTOR 2SA844	
Q303	8-729-384-48	TRANSISTOR 2SA844	
Q305	8-729-601-47	TRANSISTOR 2SK381-B	
Q306	8-729-384-48	TRANSISTOR 2SA844	
Q307	8-729-266-83	TRANSISTOR 2SC2668	
Q308	8-729-384-48	TRANSISTOR 2SA844	
Q309	8-729-601-47	TRANSISTOR 2SK381-B	
Q310	8-729-601-47	TRANSISTOR 2SK381-B	
Q313	8-729-601-47	TRANSISTOR 2SK381-B	

Ref.No.	Part No.	Description	Remark
Q314	8-729-200-17	TRANSISTOR 2SA1091	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-247-903-00	CARBON	1M	5%	1/4W	
R2	1-249-429-11	CARBON	10K	5%	1/4W	
R3	1-215-493-00	METAL	1M	1%	1/6W	
R4	1-215-469-00	METAL	100K	1%	1/6W	
R5	1-249-435-11	CARBON	33K	5%	1/4W	
R8	1-249-441-11	CARBON	100K	5%	1/4W	
R9	1-249-424-11	CARBON	3.9K	5%	1/4W	
R10	1-249-425-11	CARBON	4.7K	5%	1/4W	
R11	1-249-435-11	CARBON	33K	5%	1/4W	
R12	1-249-429-11	CARBON	10K	5%	1/4W	
R13	1-249-425-11	CARBON	4.7K	5%	1/4W	
R14	1-249-435-11	CARBON	33K	5%	1/4W	
R15	1-249-429-11	CARBON	10K	5%	1/4W	
R23	1-249-417-11	CARBON	1K	5%	1/4W	
R24	1-249-417-11	CARBON	1K	5%	1/4W	
R25	1-249-417-11	CARBON	1K	5%	1/4W	
R31	1-249-430-11	CARBON	12K	5%	1/4W	
R32	1-249-436-11	CARBON	39K	5%	1/4W	
R33	1-249-430-11	CARBON	12K	5%	1/4W	
R51	1-249-417-11	CARBON	1K	5%	1/4W	
R52	1-249-417-11	CARBON	1K	5%	1/4W	
R53	1-249-417-11	CARBON	1K	5%	1/4W	
R54	1-249-431-11	CARBON	15K	5%	1/4W	
R55	1-249-437-11	CARBON	47K	5%	1/4W	
R56	1-249-431-11	CARBON	15K	5%	1/4W	
R57	1-249-431-11	CARBON	15K	5%	1/4W	
R58	1-249-439-11	CARBON	68K	5%	1/4W	
R60	1-215-465-00	METAL	68K	1%	1/6W	
R61	1-215-445-00	METAL	10K	1%	1/6W	
R101	1-249-441-11	CARBON	100K	5%	1/4W	
R102	1-249-421-11	CARBON	2.2K	5%	1/4W	
R104	1-215-469-00	METAL	100K	1%	1/6W	
R105	1-215-475-00	METAL	180K	1%	1/6W	
R106	1-215-428-00	METAL	2K	1%	1/6W	
R107	1-249-435-11	CARBON	33K	5%	1/4W	
R108	1-249-430-11	CARBON	12K	5%	1/4W	
R109	1-249-417-11	CARBON	1K	5%	1/4W	
R110	1-249-441-11	CARBON	100K	5%	1/4W	
R111	1-249-417-11	CARBON	1K	5%	1/4W	
R112	1-249-417-11	CARBON	1K	5%	1/4W	
R113	1-247-903-00	CARBON	1M	5%	1/4W	
R114	1-249-419-11	CARBON	1.5K	5%	1/4W	
R115	1-249-419-11	CARBON	1.5K	5%	1/4W	
R116	1-249-424-11	CARBON	3.9K	5%	1/4W	
R117	1-249-419-11	CARBON	1.5K	5%	1/4W	
R118	1-215-421-00	METAL	1K	1%	1/6W	
R119	1-249-405-11	CARBON	100	5%	1/4W	
R120	1-249-405-11	CARBON	100	5%	1/4W	
R121	1-249-409-11	CARBON	220	5%	1/4W	
R122	1-215-425-00	METAL	1.5K	1%	1/6W	
R123	1-249-429-11	CARBON	10K	5%	1/4W	
R124	1-249-429-11	CARBON	10K	5%	1/4W	
R125	1-249-422-11	CARBON	2.7K	5%	1/4W	
R127	1-215-445-00	METAL	10K	1%	1/6W	
R128	1-215-445-00	METAL	10K	1%	1/6W	
R136	1-215-477-00	METAL	220K	1%	1/6W	
R137	1-249-417-11	CARBON	1K	5%	1/4W	
R138	1-249-441-11	CARBON	100K	5%	1/4W	
R140	1-249-429-11	CARBON	10K	5%	1/4W	
R141	1-215-469-00	METAL	100K	1%	1/6W	

BI **BK**

Ref.No.	Part No.	Description				Remark
R142	1-215-460-00	METAL	43K	1%	1/6W	
R143	1-215-478-00	METAL	240K	1%	1/6W	
R144	1-249-434-11	CARBON	27K	5%	1/4W	
R145	1-249-429-11	CARBON	10K	5%	1/4W	
R146	1-249-429-11	CARBON	10K	5%	1/4W	
R147	1-249-405-11	CARBON	100	5%	1/4W	
R150	1-249-405-11	CARBON	100	5%	1/4W	
R201	1-249-441-11	CARBON	100K	5%	1/4W	
R202	1-249-421-11	CARBON	2.2K	5%	1/4W	
R204	1-215-469-00	METAL	100K	1%	1/6W	
R205	1-215-475-00	METAL	180K	1%	1/6W	
R206	1-215-428-00	METAL	2K	1%	1/6W	
R207	1-249-435-11	CARBON	33K	5%	1/4W	
R208	1-249-430-11	CARBON	12K	5%	1/4W	
R209	1-249-417-11	CARBON	1K	5%	1/4W	
R210	1-249-441-11	CARBON	100K	5%	1/4W	
R211	1-249-417-11	CARBON	1K	5%	1/4W	
R212	1-249-417-11	CARBON	1K	5%	1/4W	
R213	1-247-903-00	CARBON	1M	5%	1/4W	
R214	1-249-419-11	CARBON	1.5K	5%	1/4W	
R215	1-249-419-11	CARBON	1.5K	5%	1/4W	
R216	1-249-424-11	CARBON	3.9K	5%	1/4W	
R217	1-249-419-11	CARBON	1.5K	5%	1/4W	
R218	1-215-421-00	METAL	1K	1%	1/6W	
R219	1-249-405-11	CARBON	100	5%	1/4W	
R220	1-249-405-11	CARBON	100	5%	1/4W	
R221	1-249-409-11	CARBON	220	5%	1/4W	
R222	1-215-425-00	METAL	1.5K	1%	1/6W	
R223	1-249-429-11	CARBON	10K	5%	1/4W	
R224	1-249-429-11	CARBON	10K	5%	1/4W	
R225	1-249-422-11	CARBON	2.7K	5%	1/4W	
R227	1-215-445-00	METAL	10K	1%	1/6W	
R228	1-215-445-00	METAL	10K	1%	1/6W	
R236	1-215-477-00	METAL	220K	1%	1/6W	
R237	1-249-417-11	CARBON	1K	5%	1/4W	
R238	1-249-441-11	CARBON	100K	5%	1/4W	
R240	1-249-429-11	CARBON	10K	5%	1/4W	
R241	1-215-469-00	METAL	100K	1%	1/6W	
R242	1-215-460-00	METAL	43K	1%	1/6W	
R243	1-215-478-00	METAL	240K	1%	1/6W	
R244	1-249-434-11	CARBON	27K	5%	1/4W	
R245	1-249-429-11	CARBON	10K	5%	1/4W	
R246	1-249-429-11	CARBON	10K	5%	1/4W	
R247	1-249-405-11	CARBON	100	5%	1/4W	
R250	1-249-405-11	CARBON	100	5%	1/4W	
R301	1-249-441-11	CARBON	100K	5%	1/4W	
R302	1-249-421-11	CARBON	2.2K	5%	1/4W	
R304	1-215-469-00	METAL	100K	1%	1/6W	
R305	1-215-475-00	METAL	180K	1%	1/6W	
R306	1-215-428-00	METAL	2K	1%	1/6W	
R307	1-249-435-11	CARBON	33K	5%	1/4W	
R308	1-249-430-11	CARBON	12K	5%	1/4W	
R309	1-249-417-11	CARBON	1K	5%	1/4W	
R310	1-249-441-11	CARBON	100K	5%	1/4W	
R311	1-249-417-11	CARBON	1K	5%	1/4W	
R312	1-249-417-11	CARBON	1K	5%	1/4W	
R313	1-247-903-00	CARBON	1M	5%	1/4W	
R314	1-249-419-11	CARBON	1.5K	5%	1/4W	
R315	1-249-419-11	CARBON	1.5K	5%	1/4W	
R316	1-249-424-11	CARBON	3.9K	5%	1/4W	
R317	1-249-419-11	CARBON	1.5K	5%	1/4W	
R318	1-215-421-00	METAL	1K	1%	1/6W	
R319	1-249-405-11	CARBON	100	5%	1/4W	
R320	1-249-405-11	CARBON	100	5%	1/4W	
R321	1-249-409-11	CARBON	220	5%	1/4W	
R322	1-215-425-00	METAL	1.5K	1%	1/6W	
R323	1-249-429-11	CARBON	10K	5%	1/4W	
R324	1-249-429-11	CARBON	10K	5%	1/4W	
R325	1-249-422-11	CARBON	2.7K	5%	1/4W	
R327	1-215-445-00	METAL	10K	1%	1/6W	
R328	1-215-445-00	METAL	10K	1%	1/6W	
R336	1-215-477-00	METAL	220K	1%	1/6W	
R337	1-249-417-11	CARBON	1K	5%	1/4W	
R338	1-249-441-11	CARBON	100K	5%	1/4W	
R340	1-249-429-11	CARBON	10K	5%	1/4W	
R341	1-215-469-00	METAL	100K	1%	1/6W	
R342	1-215-460-00	METAL	43K	1%	1/6W	
R343	1-215-478-00	METAL	240K	1%	1/6W	
R344	1-249-434-11	CARBON	27K	5%	1/4W	
R345	1-249-429-11	CARBON	10K	5%	1/4W	
R346	1-249-429-11	CARBON	10K	5%	1/4W	
R347	1-249-405-11	CARBON	100	5%	1/4W	
R350	1-249-405-11	CARBON	100	5%	1/4W	

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*A-1135-523-A BK BOARD, COMPLETE
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*4-353-770-00 HEAT SINK (TYPE 220)
*4-353-770-00 HEAT SINK (TYPE 220)

CONNECTOR

BK1	*1-566-056-11	PIN, CONNECTOR 4P
BK2	*1-566-056-11	PIN, CONNECTOR 4P
BK3	*1-566-056-11	PIN, CONNECTOR 4P
BK4	*1-566-055-11	PIN, CONNECTOR 3P
BK5	*1-566-057-11	PIN, CONNECTOR 5P
BK6	*1-566-043-11	PIN, CONNECTOR 4P
BK7	*1-566-043-11	PIN, CONNECTOR 4P
BK8	*1-566-043-11	PIN, CONNECTOR 4P
BK9	*1-566-054-11	PIN, CONNECTOR 2P
BK10	*1-566-054-11	PIN, CONNECTOR 2P
BK11	*1-566-054-11	PIN, CONNECTOR 2P
BK12	*1-566-056-11	PIN, CONNECTOR 4P
BK13	*1-566-041-11	PIN, CONNECTOR 2P

CAPACITOR

C1	1-124-482-11	ELECT	33MF	20%	25V
C5	1-124-482-11	ELECT	33MF	20%	25V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C11	1-124-482-11	ELECT	33MF	20%	25V
C12	1-102-816-00	CERAMIC	120PF	5%	50V
C15	1-123-939-00	ELECT	10MF	20%	200V
C16	1-102-050-00	CERAMIC	0.01MF		500V
C20	1-124-482-11	ELECT	33MF	20%	25V
C21	1-123-939-00	ELECT	10MF	20%	200V
C22	1-123-942-00	ELECT	47MF	20%	200V
C23	1-123-942-00	ELECT	47MF	20%	200V
C25	1-108-704-00	MYLAR	0.1MF	10%	200V
C31	1-136-153-00	FILM	0.01MF	5%	50V
C101	1-101-888-00	CERAMIC	68PF	5%	50V
C102	1-102-973-00	CERAMIC	100PF	5%	50V
C103	1-123-939-00	ELECT	10MF	20%	200V
C104	1-102-973-00	CERAMIC	100PF	5%	50V
C106	1-102-038-00	CERAMIC	0.001MF		500V
C107	1-102-038-00	CERAMIC	0.001MF		500V
C109	1-124-478-11	ELECT	100MF	20%	25V
C110	1-101-004-00	CERAMIC	0.01MF		50V
C111	1-124-482-11	ELECT	33MF	20%	25V
C112	1-101-004-00	CERAMIC	0.01MF		50V

Ref.No.	Part No.	Description				Remark
C113	1-124-482-11	ELECT	33MF	20%	25V	
C114	1-102-050-00	CERAMIC	0.01MF		500V	
C115	1-123-939-00	ELECT	10MF	20%	200V	
C201	1-101-888-00	CERAMIC	68PF	5%	50V	
C202	1-102-973-00	CERAMIC	100PF	5%	50V	
C203	1-123-939-00	ELECT	10MF	20%	200V	
C204	1-102-973-00	CERAMIC	100PF	5%	50V	
C206	1-102-038-00	CERAMIC	0.001MF		500V	
C207	1-102-038-00	CERAMIC	0.001MF		500V	
C209	1-124-478-11	ELECT	100MF	20%	25V	
C210	1-101-004-00	CERAMIC	0.01MF		50V	
C211	1-124-482-11	ELECT	33MF	20%	25V	
C212	1-101-004-00	CERAMIC	0.01MF		50V	
C213	1-124-482-11	ELECT	33MF	20%	25V	
C214	1-102-050-00	CERAMIC	0.01MF		500V	
C215	1-123-939-00	ELECT	10MF	20%	200V	
C301	1-101-888-00	CERAMIC	68PF	5%	50V	
C302	1-102-973-00	CERAMIC	100PF	5%	50V	
C303	1-123-939-00	ELECT	10MF	20%	200V	
C304	1-102-973-00	CERAMIC	100PF	5%	50V	
C306	1-102-038-00	CERAMIC	0.001MF		500V	
C307	1-102-038-00	CERAMIC	0.001MF		500V	
C309	1-124-478-11	ELECT	100MF	20%	25V	
C310	1-101-004-00	CERAMIC	0.01MF		50V	
C311	1-124-482-11	ELECT	33MF	20%	25V	
C312	1-101-004-00	CERAMIC	0.01MF		50V	
C313	1-124-482-11	ELECT	33MF	20%	25V	
C314	1-102-050-00	CERAMIC	0.01MF		500V	
C315	1-123-939-00	ELECT	10MF	20%	200V	

TRIMMER

Ref.No.	Part No.	Description	Remark
CV101	1-141-147-XX	CAP, TRIMMER	
CV201	1-141-147-XX	CAP, TRIMMER	
CV301	1-141-147-XX	CAP, TRIMMER	

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D12	8-719-901-83	DIODE 1SS83	
D13	8-719-901-83	DIODE 1SS83	
D14	8-719-901-83	DIODE 1SS83	
D15	8-719-110-51	DIODE RD20ES-B	
D20	8-719-911-19	DIODE 1SS119	
D21	8-719-911-19	DIODE 1SS119	
D22	8-719-911-19	DIODE 1SS119	
D23	8-719-911-19	DIODE 1SS119	
D30	8-719-911-19	DIODE 1SS119	
D101	8-719-901-83	DIODE 1SS83	
D102	8-719-901-83	DIODE 1SS83	
D103	8-719-911-19	DIODE 1SS119	
D104	8-719-911-19	DIODE 1SS119	
D105	8-719-911-19	DIODE 1SS119	
D201	8-719-901-83	DIODE 1SS83	
D202	8-719-901-83	DIODE 1SS83	
D203	8-719-911-19	DIODE 1SS119	
D204	8-719-911-19	DIODE 1SS119	
D205	8-719-911-19	DIODE 1SS119	
D301	8-719-901-83	DIODE 1SS83	
D302	8-719-901-83	DIODE 1SS83	
D303	8-719-911-19	DIODE 1SS119	
D304	8-719-911-19	DIODE 1SS119	
D305	8-719-911-19	DIODE 1SS119	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-145-58	IC UPC4558C	

COIL

Ref.No.	Part No.	Description		Remark
L21	1-410-096-31	INDUCTOR	56MMH	
L101	1-408-413-00	INDUCTOR	22UH	
L201	1-408-413-00	INDUCTOR	22UH	
L301	1-408-413-00	INDUCTOR	22UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-117-54	TRANSISTOR 2SA1175	
Q2	8-729-117-54	TRANSISTOR 2SA1175	
Q10	8-729-178-54	TRANSISTOR 2SC2785	
Q11	8-729-200-17	TRANSISTOR 2SA1091	
Q12	8-729-255-12	TRANSISTOR 2SC2551	
Q20	8-729-168-82	TRANSISTOR 2SC2688	
Q21	8-729-800-10	TRANSISTOR 2SC3068	
Q22	8-729-168-82	TRANSISTOR 2SC2688	
Q23	8-729-306-92	TRANSISTOR 2SD669A	
	*4-363-146-11	HEAT SINK, V. OUT; Q23H	
	4-370-970-01	SPACER, TR; Q23S	
Q30	8-729-168-82	TRANSISTOR 2SC2688	
Q101	8-729-178-54	TRANSISTOR 2SC2785	
Q102	8-729-117-54	TRANSISTOR 2SA1175	
Q103	8-729-384-48	TRANSISTOR 2SA844	
Q104	8-729-200-17	TRANSISTOR 2SA1091	
Q105	8-729-809-18	TRANSISTOR 2SC3956-E	
	*4-363-146-11	HEAT SINK, V. OUT; Q105H	
	4-370-970-01	SPACER, TR; Q105S	
Q106	8-729-114-22	TRANSISTOR 2SA1142	
	4-370-970-01	SPACER, TR; Q106S	
Q107	8-729-114-22	TRANSISTOR 2SA1142	
	4-370-970-01	SPACER, TR; Q107S	
Q201	8-729-178-54	TRANSISTOR 2SC2785	
Q202	8-729-117-54	TRANSISTOR 2SA1175	
Q203	8-729-384-48	TRANSISTOR 2SA844	
Q204	8-729-200-17	TRANSISTOR 2SA1091	
Q205	8-729-809-18	TRANSISTOR 2SC3956-E	
	*4-363-146-11	HEAT SINK, V. OUT; Q205H	
	4-370-970-01	SPACER, TR; Q205S	
Q206	8-729-114-22	TRANSISTOR 2SA1142	
	4-370-970-01	SPACER, TR; Q206S	
Q207	8-729-114-22	TRANSISTOR 2SA1142	
	4-370-970-01	SPACER, TR; Q207S	
Q301	8-729-178-54	TRANSISTOR 2SC2785	
Q302	8-729-117-54	TRANSISTOR 2SA1175	
Q303	8-729-384-48	TRANSISTOR 2SA844	
Q304	8-729-200-17	TRANSISTOR 2SA1091	
Q305	8-729-809-18	TRANSISTOR 2SC3956-E	
	*4-363-146-11	HEAT SINK, V. OUT; Q305H	
	4-370-970-01	SPACER, TR; Q305S	
Q306	8-729-114-22	TRANSISTOR 2SA1142	
	4-370-970-01	SPACER, TR; Q306S	
Q307	8-729-114-22	TRANSISTOR 2SA1142	
	4-370-970-01	SPACER, TR; Q307S	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-431-11	CARBON	15K	5%	1/4W	
R2	1-249-435-11	CARBON	33K	5%	1/4W	
R3	1-249-422-11	CARBON	2.7K	5%	1/4W	
R4	1-249-419-11	CARBON	1.5K	5%	1/4W	
R5	1-249-431-11	CARBON	15K	5%	1/4W	
R6	1-249-425-11	CARBON	4.7K	5%	1/4W	
R10	1-249-417-11	CARBON	1K	5%	1/4W	
R11	1-249-431-11	CARBON	15K	5%	1/4W	

BK BG

Ref.No.	Part No.	Description				Remark
R12	1-249-437-11	CARBON	47K	5%	1/4W	
R13	1-249-423-11	CARBON	3.3K	5%	1/4W	
R14	1-249-431-11	CARBON	15K	5%	1/4W	
R16	1-215-901-00	METAL OXIDE	33K	5%	2W	F
R17	1-215-901-00	METAL OXIDE	33K	5%	2W	F
R20	1-216-461-00	METAL OXIDE	5.6K	5%	2W	F
R21	1-215-471-00	METAL	120K	1%	1/6W	
R22	1-215-470-00	METAL	110K	1%	1/6W	
R23	1-215-445-00	METAL	10K	1%	1/6W	
R24	1-215-439-00	METAL	5.6K	1%	1/6W	
R25	1-215-445-00	METAL	10K	1%	1/6W	
R26	1-215-445-00	METAL	10K	1%	1/6W	
R31	1-215-464-00	CARBON	62K	5%	1/4W	
R32	1-249-440-11	CARBON	82K	5%	1/4W	
R33	1-249-430-11	CARBON	12K	5%	1/4W	
R34	1-249-429-11	CARBON	10K	5%	1/4W	
R35	1-249-417-11	CARBON	1K	5%	1/4W	
R37	1-249-415-11	CARBON	680	5%	1/4W	
R38	1-249-441-11	CARBON	100K	5%	1/4W	
R100	1-249-405-11	CARBON	100	5%	1/4W	
R101	1-215-409-00	METAL	330	1%	1/6W	
R102	1-249-419-11	CARBON	1.5K	5%	1/4W	
R103	1-215-435-00	METAL	3.9K	1%	1/6W	
R104	1-249-422-11	CARBON	2.7K	5%	1/4W	
R105	1-249-405-11	CARBON	100	5%	1/4W	
R106	1-215-412-00	METAL	430	1%	1/6W	
R107	1-215-467-00	METAL	82K	1%	1/6W	
R108	1-215-467-00	METAL	82K	1%	1/6W	
R109	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R110	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R111	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R112	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R113	1-249-405-11	CARBON	100	5%	1/4W	
R114	1-215-401-11	METAL	150	1%	1/6W	
R115	1-215-865-11	METAL OXIDE	220	5%	1W	F
R116	1-215-439-00	METAL	5.6K	1%	1/6W	
R117	1-215-481-00	METAL	330K	1%	1/6W	
R119	1-249-431-11	CARBON	15K	5%	1/4W	
R120	1-249-405-11	CARBON	100	5%	1/4W	
R124	1-249-423-11	CARBON	3.3K	5%	1/4W	
R125	1-249-429-11	CARBON	10K	5%	1/4W	
R126	1-249-429-11	CARBON	10K	5%	1/4W	
R127	1-249-417-11	CARBON	1K	5%	1/4W	
R200	1-249-405-11	CARBON	100	5%	1/4W	
R201	1-215-409-00	METAL	330	1%	1/6W	
R202	1-249-419-11	CARBON	1.5K	5%	1/4W	
R203	1-215-435-00	METAL	3.9K	1%	1/6W	
R204	1-249-422-11	CARBON	2.7K	5%	1/4W	
R205	1-249-405-11	CARBON	100	5%	1/4W	
R206	1-215-412-00	METAL	430	1%	1/6W	
R207	1-215-467-00	METAL	82K	1%	1/6W	
R208	1-215-467-00	METAL	82K	1%	1/6W	
R209	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R210	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R211	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R212	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R213	1-249-405-11	CARBON	100	5%	1/4W	
R214	1-215-401-11	METAL	150	1%	1/6W	
R215	1-215-865-11	METAL OXIDE	220	5%	1W	F
R216	1-215-439-00	METAL	5.6K	1%	1/6W	
R217	1-215-481-00	METAL	330K	1%	1/6W	
R219	1-249-431-11	CARBON	15K	5%	1/4W	
R220	1-249-405-11	CARBON	100	5%	1/4W	
R224	1-249-423-11	CARBON	3.3K	5%	1/4W	
R225	1-249-429-11	CARBON	10K	5%	1/4W	
R226	1-249-429-11	CARBON	10K	5%	1/4W	
R227	1-249-417-11	CARBON	1K	5%	1/4W	
R300	1-249-405-11	CARBON	100	5%	1/4W	
R301	1-215-409-00	METAL	330	1%	1/6W	
R302	1-249-419-11	CARBON	1.5K	5%	1/4W	
R303	1-215-435-00	METAL	3.9K	1%	1/6W	
R304	1-249-422-11	CARBON	2.7K	5%	1/4W	
R305	1-249-405-11	CARBON	100	5%	1/4W	
R306	1-215-412-00	METAL	430	1%	1/6W	
R307	1-215-467-00	METAL	82K	1%	1/6W	
R308	1-215-467-00	METAL	82K	1%	1/6W	
R309	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R310	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R311	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R312	1-216-457-00	METAL OXIDE	1.2K	5%	2W	F
R313	1-249-405-11	CARBON	100	5%	1/4W	
R314	1-215-401-11	METAL	150	1%	1/6W	
R315	1-215-865-11	METAL OXIDE	220	5%	1W	F
R316	1-215-439-00	METAL	5.6K	1%	1/6W	
R317	1-215-481-00	METAL	330K	1%	1/6W	
R319	1-249-431-11	CARBON	15K	5%	1/4W	
R320	1-249-405-11	CARBON	100	5%	1/4W	
R324	1-249-423-11	CARBON	3.3K	5%	1/4W	
R325	1-249-429-11	CARBON	10K	5%	1/4W	
R326	1-249-429-11	CARBON	10K	5%	1/4W	
R327	1-249-417-11	CARBON	1K	5%	1/4W	

VARIABLE RESISTOR

RV101	1-237-515-21	RES, ADJ, CERMET 1K
RV201	1-237-515-21	RES, ADJ, CERMET 1K
RV301	1-237-515-21	RES, ADJ, CERMET 1K

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*A-1135-537-A BG BOARD, COMPLETE
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*4-353-708-00 HOOK, FINGER

CAPACITOR

C1	1-123-332-00	ELECT	47MF	20%	16V
C2	1-123-332-00	ELECT	47MF	20%	16V
C3	1-123-356-00	ELECT	10MF	20%	16V
C4	1-123-332-00	ELECT	47MF	20%	16V
C7	1-101-004-00	CERAMIC	0.01MF		50V
C8	1-101-004-00	CERAMIC	0.01MF		50V
C9	1-101-004-00	CERAMIC	0.01MF		50V
C10	1-102-935-00	CERAMIC	2PF	0.25PF	50V
C12	1-101-004-00	CERAMIC	0.01MF		50V
C15	1-102-965-00	CERAMIC	39PF	5%	50V
C16	1-101-004-00	CERAMIC	0.01MF		50V
C22	1-101-004-00	CERAMIC	0.01MF		50V
C25	1-102-965-00	CERAMIC	39PF	5%	50V
C26	1-101-004-00	CERAMIC	0.01MF		50V
C32	1-101-004-00	CERAMIC	0.01MF		50V
C33	1-136-165-00	FILM	0.1MF	5%	50V
C34	1-136-165-00	FILM	0.1MF	5%	50V
C35	1-136-165-00	FILM	0.1MF	5%	50V
C51	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C52	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C53	1-123-356-00	ELECT	10MF	20%	25V
C54	1-101-004-00	CERAMIC	0.01MF		50V
C55	1-102-848-00	CERAMIC	180PF	5%	50V

Ref.No.	Part No.	Description			Remark
C56	1-102-848-00	CERAMIC	180PF	5%	50V
C101	1-124-963-11	ELECT	33MF	20%	16V
C102	1-124-963-11	ELECT	33MF	20%	16V
C103	1-124-963-11	ELECT	33MF	20%	16V
C105	1-123-333-00	ELECT	100MF	20%	16V
C106	1-124-963-11	ELECT	33MF	20%	16V
C111	1-123-356-00	ELECT	10MF	20%	16V
C112	1-101-004-00	CERAMIC	0.01MF		50V
C113	1-101-004-00	CERAMIC	0.01MF		50V
C114	1-101-004-00	CERAMIC	0.01MF		50V
C115	1-101-004-00	CERAMIC	0.01MF		50V
C116	1-101-004-00	CERAMIC	0.01MF		50V
C117	1-101-004-00	CERAMIC	0.01MF		50V
C131	1-124-963-11	ELECT	33MF	20%	16V
C132	1-124-963-11	ELECT	33MF	20%	16V
C133	1-124-963-11	ELECT	33MF	20%	16V
C135	1-123-333-00	ELECT	100MF	20%	16V
C136	1-124-963-11	ELECT	33MF	20%	16V
C141	1-101-004-00	CERAMIC	0.01MF		50V
C142	1-101-004-00	CERAMIC	0.01MF		50V
C143	1-101-004-00	CERAMIC	0.01MF		50V
C144	1-101-004-00	CERAMIC	0.01MF		50V
C145	1-101-004-00	CERAMIC	0.01MF		50V
C146	1-101-004-00	CERAMIC	0.01MF		50V
C147	1-101-004-00	CERAMIC	0.01MF		50V

TRIMMER

CV2	1-141-181-11	CAP, TRIMMER
CV3	1-141-171-00	CAP, TRIMMER 20P

DIODE

D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D5	8-719-911-19	DIODE 1SS119
D6	8-719-911-19	DIODE 1SS119
D7	8-719-911-19	DIODE 1SS119
D16	8-719-911-19	DIODE 1SS119
D17	8-719-911-19	DIODE 1SS119

DELAY LINE

DL1	1-415-477-11	DELAY LINE
DL2	1-415-458-11	DELAY LINE
DL3	1-415-458-11	DELAY LINE
DL4	1-415-458-11	DELAY LINE

IC

IC1	8-759-800-81	IC LA7016
IC2	8-769-401-89	TRANSISTOR TX-429M
IC3	8-759-145-58	IC UPC4558C
IC4	8-757-182-14	IC CX-718D
IC5	8-759-140-53	IC UPD4053BC
IC6	8-759-140-53	IC UPD4053BC
IC7	8-759-990-82	IC TL082CP

COIL

L2	1-408-408-00	INDUCTOR	8.2UH
L3	1-408-413-00	INDUCTOR	22UH
L4	1-408-413-00	INDUCTOR	22UH

Ref.No.	Part No.	Description	Remark

TRANSISTOR

Q1	8-729-600-24	TRANSISTOR 2SC403SP-51
Q5	8-729-600-24	TRANSISTOR 2SC403SP-51
Q7	8-729-600-24	TRANSISTOR 2SC403SP-51
Q8	8-729-600-24	TRANSISTOR 2SC403SP-51
Q9	8-729-600-24	TRANSISTOR 2SC403SP-51
Q10	8-729-384-48	TRANSISTOR 2SA844
Q11	8-729-600-24	TRANSISTOR 2SC403SP-51
Q12	8-729-600-24	TRANSISTOR 2SC403SP-51
Q13	8-729-600-24	TRANSISTOR 2SC403SP-51
Q14	8-729-800-10	TRANSISTOR 2SC3068
Q21	8-729-384-48	TRANSISTOR 2SA844
Q22	8-729-600-24	TRANSISTOR 2SC403SP-51
Q23	8-729-600-24	TRANSISTOR 2SC403SP-51
Q24	8-729-601-47	TRANSISTOR 2SK381-B
Q25	8-729-384-48	TRANSISTOR 2SA844
Q26	8-729-600-24	TRANSISTOR 2SC403SP-51
Q27	8-729-600-24	TRANSISTOR 2SC403SP-51
Q28	8-729-601-47	TRANSISTOR 2SK381-B
Q29	8-729-600-24	TRANSISTOR 2SC403SP-51
Q30	8-729-600-24	TRANSISTOR 2SC403SP-51
Q31	8-729-384-48	TRANSISTOR 2SA844
Q32	8-729-600-24	TRANSISTOR 2SC403SP-51
Q33	8-729-600-24	TRANSISTOR 2SC403SP-51
Q34	8-729-601-47	TRANSISTOR 2SK381-B
Q35	8-729-384-48	TRANSISTOR 2SA844
Q36	8-729-600-24	TRANSISTOR 2SC403SP-51
Q37	8-729-600-24	TRANSISTOR 2SC403SP-51
Q38	8-729-601-47	TRANSISTOR 2SK381-B
Q39	8-729-600-24	TRANSISTOR 2SC403SP-51
Q40	8-729-600-24	TRANSISTOR 2SC403SP-51
Q41	8-729-384-48	TRANSISTOR 2SA844
Q42	8-729-384-48	TRANSISTOR 2SA844
Q43	8-729-600-24	TRANSISTOR 2SC403SP-51
Q44	8-729-384-48	TRANSISTOR 2SA844
Q45	8-729-600-24	TRANSISTOR 2SC403SP-51
Q49	8-729-600-24	TRANSISTOR 2SC403SP-51
Q50	8-729-600-24	TRANSISTOR 2SC403SP-51
Q71	8-729-384-48	TRANSISTOR 2SA844
Q72	8-729-600-24	TRANSISTOR 2SC403SP-51
Q73	8-729-600-24	TRANSISTOR 2SC403SP-51
Q74	8-729-384-48	TRANSISTOR 2SA844
Q75	8-729-800-10	TRANSISTOR 2SC3068
Q76	8-729-900-63	TRANSISTOR DTA124ES
Q77	8-729-900-63	TRANSISTOR DTA124ES
Q81	8-729-384-48	TRANSISTOR 2SA844
Q82	8-729-600-24	TRANSISTOR 2SC403SP-51
Q83	8-729-600-24	TRANSISTOR 2SC403SP-51
Q84	8-729-384-48	TRANSISTOR 2SA844
Q85	8-729-800-10	TRANSISTOR 2SC3068

RESISTOR

R1	1-249-405-11	CARBON	100	5%	1/4W
R2	1-215-396-00	METAL	91	1%	1/6W
R3	1-215-431-00	METAL	2.7K	1%	1/6W
R4	1-249-419-11	CARBON	1.5K	5%	1/4W
R6	1-249-405-11	CARBON	100	5%	1/4W
R7	1-249-405-11	CARBON	100	5%	1/4W
R8	1-249-429-11	CARBON	10K	5%	1/4W
R10	1-247-830-11	CARBON	910	5%	1/4W
R11	1-249-417-11	CARBON	1K	5%	1/4W
R12	1-249-417-11	CARBON	1K	5%	1/4W

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
R13	1-215-462-00	METAL	51K	1%	1/6W	
R14	1-249-426-11	CARBON	5.6K	5%	1/4W	
R15	1-247-903-00	CARBON	1M	5%	1/4W	
R16	1-215-477-00	METAL	220K	1%	1/6W	
R17	1-249-429-11	CARBON	10K	5%	1/4W	
R18	1-249-429-11	CARBON	10K	5%	1/4W	
R19	1-249-417-11	CARBON	1K	5%	1/4W	
R20	1-215-421-00	METAL	1K	1%	1/6W	
R21	1-215-421-00	METAL	1K	1%	1/6W	
R22	1-249-441-11	CARBON	100K	5%	1/4W	
R23	1-215-409-00	METAL	330	1%	1/6W	
R24	1-215-380-00	METAL	20	1%	1/6W	
R25	1-215-380-00	METAL	20	1%	1/6W	
R26	1-215-409-00	METAL	330	1%	1/6W	
R27	1-249-429-11	CARBON	10K	5%	1/4W	
R28	1-249-417-11	CARBON	1K	5%	1/4W	
R29	1-215-418-00	METAL	750	1%	1/6W	
R30	1-249-422-11	CARBON	2.7K	5%	1/4W	
R31	1-249-405-11	CARBON	100	5%	1/4W	
R32	1-249-422-11	CARBON	2.7K	5%	1/4W	
R33	1-249-429-11	CARBON	10K	5%	1/4W	
R34	1-249-428-11	CARBON	8.2K	5%	1/4W	
R35	1-249-417-11	CARBON	1K	5%	1/4W	
R36	1-249-422-11	CARBON	2.7K	5%	1/4W	
R37	1-249-405-11	CARBON	100	5%	1/4W	
R40	1-249-425-11	CARBON	4.7K	5%	1/4W	
R41	1-249-422-11	CARBON	2.7K	5%	1/4W	
R42	1-249-417-11	CARBON	1K	5%	1/4W	
R43	1-249-417-11	CARBON	1K	5%	1/4W	
R44	1-249-431-11	CARBON	15K	5%	1/4W	
R45	1-249-423-11	CARBON	3.3K	5%	1/4W	
R46	1-249-417-11	CARBON	1K	5%	1/4W	
R47	1-249-423-11	CARBON	3.3K	5%	1/4W	
R48	1-249-422-11	CARBON	2.7K	5%	1/4W	
R49	1-249-405-11	CARBON	100	5%	1/4W	
R50	1-249-422-11	CARBON	2.7K	5%	1/4W	
R51	1-247-903-00	CARBON	1M	5%	1/4W	
R52	1-247-866-11	CARBON	30K	5%	1/4W	
R53	1-215-445-00	METAL	10K	1%	1/6W	
R54	1-249-420-11	CARBON	1.8K	5%	1/4W	
R55	1-249-422-11	CARBON	2.7K	5%	1/4W	
R56	1-249-405-11	CARBON	100	5%	1/4W	
R57	1-249-422-11	CARBON	2.7K	5%	1/4W	
R58	1-249-422-11	CARBON	2.7K	5%	1/4W	
R59	1-249-422-11	CARBON	2.7K	5%	1/4W	
R61	1-249-422-11	CARBON	2.7K	5%	1/4W	
R62	1-249-417-11	CARBON	1K	5%	1/4W	
R63	1-249-417-11	CARBON	1K	5%	1/4W	
R64	1-249-431-11	CARBON	15K	5%	1/4W	
R65	1-249-423-11	CARBON	3.3K	5%	1/4W	
R66	1-249-417-11	CARBON	1K	5%	1/4W	
R67	1-249-423-11	CARBON	3.3K	5%	1/4W	
R68	1-249-422-11	CARBON	2.7K	5%	1/4W	
R69	1-249-405-11	CARBON	100	5%	1/4W	
R70	1-249-422-11	CARBON	2.7K	5%	1/4W	
R71	1-247-903-00	CARBON	1M	5%	1/4W	
R72	1-247-866-11	CARBON	30K	5%	1/4W	
R73	1-215-445-00	METAL	10K	1%	1/6W	
R74	1-249-420-11	CARBON	1.8K	5%	1/4W	
R75	1-249-422-11	CARBON	2.7K	5%	1/4W	
R76	1-249-405-11	CARBON	100	5%	1/4W	
R77	1-249-422-11	CARBON	2.7K	5%	1/4W	
R78	1-249-422-11	CARBON	2.7K	5%	1/4W	
R79	1-249-422-11	CARBON	2.7K	5%	1/4W	
R80	1-249-405-11	CARBON	100	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R81	1-249-422-11	CARBON	2.7K	5%	1/4W	
R82	1-247-903-00	CARBON	1M	5%	1/4W	
R83	1-249-420-11	CARBON	1.8K	5%	1/4W	
R84	1-249-405-11	CARBON	100	5%	1/4W	
R85	1-247-866-11	CARBON	30K	5%	1/4W	
R86	1-215-445-00	METAL	10K	1%	1/6W	
R87	1-249-422-11	CARBON	2.7K	5%	1/4W	
R88	1-215-430-00	METAL	2.4K	1%	1/6W	
R89	1-215-443-00	METAL	8.2K	1%	1/6W	
R90	1-249-430-11	CARBON	12K	5%	1/4W	
R91	1-249-405-11	CARBON	100	5%	1/4W	
R92	1-247-830-11	CARBON	910	5%	1/4W	
R93	1-215-421-00	METAL	1K	1%	1/6W	
R94	1-249-422-11	CARBON	2.7K	5%	1/4W	
R98	1-249-422-11	CARBON	2.7K	5%	1/4W	
R99	1-249-422-11	CARBON	2.7K	5%	1/4W	
R161	1-215-438-00	METAL	5.1K	1%	1/6W	
R162	1-249-431-11	CARBON	15K	5%	1/4W	
R163	1-249-417-11	CARBON	1K	5%	1/4W	
R164	1-215-435-00	METAL	3.9K	1%	1/6W	
R165	1-249-422-11	CARBON	2.7K	5%	1/4W	
R166	1-249-422-11	CARBON	2.7K	5%	1/4W	
R167	1-215-409-00	METAL	330	1%	1/6W	
R168	1-215-411-00	METAL	390	1%	1/6W	
R169	1-215-427-00	METAL	1.8K	1%	1/6W	
R170	1-249-425-11	CARBON	4.7K	5%	1/4W	
R171	1-215-436-00	METAL	4.3K	1%	1/6W	
R172	1-249-431-11	CARBON	15K	5%	1/4W	
R173	1-249-417-11	CARBON	1K	5%	1/4W	
R174	1-215-435-00	METAL	3.9K	1%	1/6W	
R175	1-249-422-11	CARBON	2.7K	5%	1/4W	
R176	1-249-422-11	CARBON	2.7K	5%	1/4W	
R177	1-215-409-00	METAL	330	1%	1/6W	
R178	1-215-414-00	METAL	510	1%	1/6W	
R179	1-215-422-00	METAL	1.1K	1%	1/6W	
R180	1-249-425-11	CARBON	4.7K	5%	1/4W	
R181	1-215-380-00	METAL	20	1%	1/6W	
R182	1-215-380-00	METAL	20	1%	1/6W	
R183	1-249-433-11	CARBON	22K	5%	1/4W	
R184	1-249-425-11	CARBON	4.7K	5%	1/4W	
R201	1-249-437-11	CARBON	47K	5%	1/4W	
R202	1-249-429-11	CARBON	10K	5%	1/4W	
R203	1-249-435-11	CARBON	33K	5%	1/4W	
R204	1-247-872-11	CARBON	51K	5%	1/4W	

VARIABLE RESISTOR

RV1	1-237-514-21	RES, ADJ, CERMET 500
RV2	1-237-508-21	RES, ADJ, CERMET 500K
RV3	1-237-498-21	RES, ADJ, CERMET 200
RV4	1-237-500-11	RES, ADJ, CERMET 1K
RV5	1-237-500-11	RES, ADJ, CERMET 1K
RV21	1-237-517-21	RES, ADJ, CERMET 5K
RV22	1-237-517-21	RES, ADJ, CERMET 5K

SWITCH

S1	1-554-076-21	SWITCH, SLIDE

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	*1-627-670-11	P BOARD *******
	⚠1-439-395-11	TRANSFORMER ASSY, FLYBACK
	*4-341-752-01	EYELET

*1-617-895-11 QA BOARD
****

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-106-367-00	MYLAR	0.01MF	10%	200V	
C2	1-124-013-11	ELECT	100MF	20%	16V	
C3	1-101-004-00	CERAMIC	0.01MF		50V	
C4	1-106-367-00	MYLAR	0.01MF	10%	200V	
C5	1-124-013-11	ELECT	100MF	20%	16V	
C6	1-101-004-00	CERAMIC	0.01MF		50V	
C7	1-106-367-00	MYLAR	0.01MF	10%	200V	
C8	1-124-013-11	ELECT	100MF	20%	16V	
C9	1-101-004-00	CERAMIC	0.01MF		50V	
C10	1-102-951-00	CERAMIC	15PF	5%	50V	
C11	1-102-951-00	CERAMIC	15PF	5%	50V	
C12	1-102-951-00	CERAMIC	15PF	5%	50V	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-215-449-00	METAL	15K	1%	1/6W	
R2	1-215-449-00	METAL	15K	1%	1/6W	
R3	1-249-439-11	CARBON	68K	5%	1/4W	

SWITCH

Ref.No.	Part No.	Description	Remark
S1	1-554-076-21	SWITCH, SLIDE	
S2	1-554-076-21	SWITCH, SLIDE	
S3	1-554-076-21	SWITCH, SLIDE	

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*1-618-786-11 QB BOARD
****

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-108-692-81	MYLAR	0.01MF	10%	200V	
C2	1-124-013-11	ELECT	100MF	20%	16V	
C3	1-101-004-00	CERAMIC	0.01MF		50V	
C4	1-108-692-81	MYLAR	0.01MF	10%	200V	
C5	1-124-013-11	ELECT	100MF	20%	16V	
C6	1-101-004-00	CERAMIC	0.01MF		50V	
C7	1-108-692-81	MYLAR	0.01MF	10%	200V	
C8	1-124-013-11	ELECT	100MF	20%	16V	
C9	1-101-004-00	CERAMIC	0.01MF		50V	
C10	1-102-951-00	CERAMIC	15PF	5%	50V	
C11	1-102-951-00	CERAMIC	15PF	5%	50V	
C12	1-102-951-00	CERAMIC	15PF	5%	50V	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-215-449-00	METAL	15K	1%	1/6W	
R2	1-215-449-00	METAL	15K	1%	1/6W	
R3	1-215-449-00	METAL	15K	1%	1/6W	

SWITCH

Ref.No.	Part No.	Description	Remark
S1	1-554-076-21	SWITCH, SLIDE	
S2	1-554-076-21	SWITCH, SLIDE	
S3	1-554-076-21	SWITCH, SLIDE	

*1-617-885-11 GC BOARD
****

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-123-330-00	ELECT	22MF	20%	25V	
C2	1-123-330-00	ELECT	22MF	20%	25V	
C3	1-123-330-00	ELECT	22MF	20%	25V	
C4	1-123-330-00	ELECT	22MF	20%	25V	
C5	1-123-330-00	ELECT	22MF	20%	25V	
C6	1-123-330-00	ELECT	22MF	20%	25V	
C7	1-123-330-00	ELECT	22MF	20%	25V	
C8	1-123-330-00	ELECT	22MF	20%	25V	
C9	1-123-330-00	ELECT	22MF	20%	25V	
C12	1-101-004-00	CERAMIC	0.01MF		50V	
C14	1-101-004-00	CERAMIC	0.01MF		50V	
C16	1-101-004-00	CERAMIC	0.01MF		50V	
C17	1-101-004-00	CERAMIC	0.01MF		50V	
C18	1-101-004-00	CERAMIC	0.01MF		50V	

CONNECTOR

Ref.No.	Part No.	Description	Remark
GC1	*1-566-044-11	PIN, CONNECTOR 5P	
GC2	*1-566-057-11	PIN, CONNECTOR 5P	
GC3	*1-566-044-11	PIN, CONNECTOR 5P	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-179-12	IC UPC7912H	
IC2	8-759-179-12	IC UPC7912H	
IC3	8-759-700-06	IC NJM7812B	
IC4	8-759-700-06	IC NJM7812B	

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*A-1316-089-A GA BOARD, COMPLETE (BVM-1315 ONLY)
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Ref.No.	Part No.	Description	Remark
	*2-990-241-01	HOLDER (A), PLUG	
	*3-337-402-01	BAND, BINDING	
	*4-347-706-00	HEAT SINK (TR)	
	*4-371-803-01	COVER, FUSE HOLDER	
	*4-371-879-02	COVER, AC SELECT	
	4-379-403-01	SPACER (G1), POLISHING	
	*4-379-408-01	INSULATOR (G3)	
	*4-379-409-01	NUT, PLATE	
	4-379-410-01	SPACER (G2), POLISHING	
	*4-379-430-01	PANEL, POWER	
	*4-386-847-01	HEAT SINK (S.R.T)	
	*4-386-848-01	BAND (S.R.T)	
	4-601-466-11	COVER, 3P INLET	

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-124-024-00	ELECT	4.7MF	20%	350V	
C2	1-124-024-00	ELECT	4.7MF	20%	350V	
C3	1-162-117-00	CERAMIC	100PF	10%	500V	
C4	1-162-117-00	CERAMIC	100PF	10%	500V	
C5	1-162-117-00	CERAMIC	100PF	10%	500V	
C6	1-162-117-00	CERAMIC	100PF	10%	500V	
C7	1-124-128-00	ELECT	470MF	20%	25V	
C8	1-124-525-11	ELECT	1000MF	20%	25V	
C9	1-124-128-00	ELECT	470MF	20%	25V	
C10	1-124-525-11	ELECT	1000MF	20%	25V	
C11	1-124-128-00	ELECT	470MF	20%	25V	
C12	1-124-129-00	ELECT	2200MF	20%	25V	
C13	1-124-128-00	ELECT	470MF	20%	25V	

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

GA

Ref.No.	Part No.	Description			Remark
C14	1-124-129-00	ELECT	2200MF	20%	25V
C15	1-123-985-51	ELECT	1000MF	20%	16V
C16	1-123-874-00	ELECT	470MF	20%	16V
C17	1-106-375-12	MYLAR	0.022MF	10%	100V
C18	1-108-638-11	MYLAR	0.1MF	10%	100V
C19	1-102-030-00	CERAMIC	330PF	10%	500V
C20	1-162-117-00	CERAMIC	100PF	10%	500V
C21	1-102-038-00	CERAMIC	0.001MF		500V
C22	1-162-117-00	CERAMIC	100PF	10%	500V
C23	1-106-375-12	MYLAR	0.022MF	10%	100V
C24	1-108-638-11	MYLAR	0.1MF	10%	100V
C25	1-123-380-00	ELECT	1MF	20%	50V
C26	1-101-361-00	CERAMIC	150PF	5%	50V
C27	1-101-361-00	CERAMIC	150PF	5%	50V
C28	1-123-356-00	ELECT	10MF	20%	16V
C29	1-123-332-00	ELECT	47MF	20%	25V
C30	1-162-117-00	CERAMIC	100PF	10%	500V
C31	1-102-030-00	CERAMIC	330PF	10%	500V
C32	1-123-380-00	ELECT	1MF	20%	50V
C33	1-101-361-00	CERAMIC	150PF	5%	50V
C34	1-101-361-00	CERAMIC	150PF	5%	50V
C35	1-123-380-00	ELECT	1MF	20%	50V
C36	1-123-332-00	ELECT	47MF	20%	25V
C37	1-130-734-00	FILM	0.0068MF	5%	50V
C38	1-136-165-00	FILM	0.1MF	5%	50V
C39	1-136-165-00	FILM	0.1MF	5%	50V
C40	1-123-381-00	ELECT	2.2MF	20%	50V
C41	1-102-038-00	CERAMIC	0.001MF		500V
C42	1-136-165-00	FILM	0.1MF	5%	50V
C43	1-106-375-12	MYLAR	0.022MF	10%	100V
C44	1-123-356-00	ELECT	10MF	20%	16V
C45	1-162-132-00	CERAMIC	270PF	10%	2KV
C46	1-123-356-00	ELECT	10MF	20%	16V
C47	1-136-173-00	FILM	0.47MF	5%	50V
C48	1-136-173-00	FILM	0.47MF	5%	50V
C49	1-123-356-00	ELECT	10MF	20%	16V
C50	1-101-006-00	CERAMIC	0.047MF		50V
C51	1-101-006-00	CERAMIC	0.047MF		50V
C52	1-101-006-00	CERAMIC	0.047MF		50V
C53	1-101-006-00	CERAMIC	0.047MF		50V
C54	1-101-006-00	CERAMIC	0.047MF		50V
C55	1-123-356-00	ELECT	10MF	20%	16V
C56	1-130-808-00	FILM	0.22MF	5%	400V
C57	1-123-356-00	ELECT	10MF	20%	25V
C58	1-123-379-00	ELECT	0.47MF	20%	50V
C59	1-130-734-00	FILM	0.0068MF	5%	50V
C60	1-102-228-00	CERAMIC	470PF	10%	500V
C61	1-102-228-00	CERAMIC	470PF	10%	500V
C62	1-102-228-00	CERAMIC	470PF	10%	500V
C63	1-102-228-00	CERAMIC	470PF	10%	500V
C64	1-124-024-00	ELECT	4.7MF	20%	350V
C65	1-124-024-00	ELECT	4.7MF	20%	350V
C66	1-162-117-00	CERAMIC	100PF	10%	500V
C67	1-162-117-00	CERAMIC	100PF	10%	500V
C68	1-162-117-00	CERAMIC	100PF	10%	500V
C69	1-124-562-11	ELECT	47MF	20%	200V
C70	1-124-805-51	ELECT	100MF	20%	160V
C71	1-162-117-00	CERAMIC	100PF	10%	500V
C72	1-124-562-11	ELECT	47MF	20%	200V
C73	1-124-805-51	ELECT	100MF	20%	160V
C74	1-123-333-00	ELECT	100MF	20%	16V
C75	1-123-333-00	ELECT	100MF	20%	16V
C76	⚠ 1-161-953-51	CERAMIC	0.0047MF	20%	400V
C77	⚠ 1-161-953-51	CERAMIC	0.0047MF	20%	400V
C78	1-162-599-12	CERAMIC	0.0047MF	20%	400V

Ref.No.	Part No.	Description			Remark
C79	1-162-599-12	CERAMIC	0.0047MF	20%	400V
C80	1-125-295-00	ELECT(BLOCK)	560MF	20%	200V
C81	1-125-295-00	ELECT(BLOCK)	560MF	20%	200V
C82	1-123-369-00	ELECT	4.7MF	20%	25V
C83	1-101-004-00	CERAMIC	0.01MF		50V
C84	⚠ 1-136-311-61	FILM	0.47MF	20%	300V
C85	⚠ 1-162-578-51	CERAMIC	0.0047MF	20%	400V
C86	⚠ 1-162-578-51	CERAMIC	0.0047MF	20%	400V
C87	⚠ 1-162-578-51	CERAMIC	0.0047MF	20%	400V
C88	⚠ 1-162-578-51	CERAMIC	0.0047MF	20%	400V
C89	⚠ 1-136-311-61	FILM	0.47MF	20%	300V
C90	1-136-159-00	FILM	0.033MF	5%	50V
C92	1-136-159-00	FILM	0.033MF	5%	50V
C94	1-102-038-00	CERAMIC	0.001MF		500V
C95	1-136-173-00	FILM	0.47MF	5%	50V
C96	1-102-050-00	CERAMIC	0.01MF		500V
C97	1-136-173-00	FILM	0.47MF	5%	50V
C98	1-136-173-00	FILM	0.47MF	5%	50V
C99	1-102-050-00	CERAMIC	0.01MF		500V
C100	1-162-117-00	CERAMIC	100PF	10%	500V
C101	1-162-117-00	CERAMIC	100PF	10%	500V
C102	1-136-332-11	FILM	0.01MF	5%	630V
C103	1-136-332-11	FILM	0.01MF	5%	630V

DIODE

Ref.No.	Part No.	Description
D1	8-719-912-51	DIODE ESAC25-04C
D2	8-719-918-73	DIODE ESAC25-04N
D3	8-719-901-73	DIODE ESAD25-04D
D4	8-719-901-73	DIODE ESAD25-04D
D5	8-719-907-24	DIODE ESAC31-02D
D6	8-719-907-24	DIODE ESAC31-02D
D7	8-719-924-06	DIODE ERC24-06S
D8	8-719-300-52	DIODE CTU-38R
D9	8-719-300-53	DIODE CTU-38S
D10	8-719-912-51	DIODE ESAC25-04C
D11	8-719-918-73	DIODE ESAC25-04N
D12	8-719-911-19	DIODE 1SS119
D13	8-719-911-19	DIODE 1SS119
D14	8-719-100-57	DIODE RD10E-B2
D15	8-719-911-19	DIODE 1SS119
D16	8-719-911-19	DIODE 1SS119
D17	8-719-911-19	DIODE 1SS119
D18	8-719-100-35	DIODE RD5.6E-B2
D20	8-719-200-02	DIODE 10E2
D21	⚠ 8-719-300-07	DIODE RB406N
D22	8-759-157-40	IC UPC574J
D23	8-719-911-19	DIODE 1SS119
D24	8-719-100-57	DIODE RD10E-B2
D25	8-719-911-19	DIODE 1SS119
D26	8-719-003-08	THYRISTOR CR3CM-8
D27	8-719-981-00	DIODE ERC81-004
D28	8-719-981-00	DIODE ERC81-004
D29	8-719-981-00	DIODE ERC81-004
D30	8-719-981-00	DIODE ERC81-004
D31	8-719-924-06	DIODE ERC24-06S
D32	8-719-924-06	DIODE ERC24-06S

CONNECTOR

Ref.No.	Part No.	Description
GA1	*1-506-348-XX	PIN, CONNECTOR 3P
GA2	*1-506-371-00	PIN, CONNECTOR 2P
GA3	*1-508-768-00	6P PLUG
GA4	*1-508-786-00	2P PLUG (M)
GA5	*1-566-055-11	PIN, CONNECTOR 3P

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- The components identified by ☒ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

GA

Ref.No.	Part No.	Description	Remark
GA6	*1-566-055-11	PIN, CONNECTOR 3P	
GA7	*1-566-058-11	PIN, CONNECTOR 6P	
GA8	*1-566-057-11	PIN, CONNECTOR 5P	

IC

Ref.No.	Part No.	Description	Remark
IC1	1-806-805-11	IC MC5433	
IC2	8-759-904-94	IC TL494CN	
IC3	8-759-904-94	IC TL494CN	

COIL

Ref.No.	Part No.	Description	Remark
L3	1-459-643-11	COIL, CHOKE 525UH	
L4	1-459-643-11	COIL, CHOKE 525UH	
L5	1-459-643-11	COIL, CHOKE 525UH	
L6	1-459-643-11	COIL, CHOKE 525UH	
L7	1-459-207-00	COIL, CORE	
L8	1-459-644-11	COIL, CHOKE 2.9MMH	
L9	1-459-645-11	COIL, CHOKE 20MMH	
L10	1-421-329-00	COIL, CHOKE	
L11	1-421-329-00	COIL, CHOKE	
L12	1-421-329-00	COIL, CHOKE	
L13	1-421-329-00	COIL, CHOKE	
L14	1-421-329-00	COIL, CHOKE	
L15	1-421-329-00	COIL, CHOKE	
L16	1-421-329-00	COIL, CHOKE	
L17	⚠ 1-421-556-21	TRANSFORMER, LINE FILTER (LFT)	
L18	⚠ 1-421-556-21	TRANSFORMER, LINE FILTER (LFT)	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-301-76	TRANSISTOR STR8124-R	
Q2	8-729-301-76	TRANSISTOR STR8124-R	
Q3	8-729-177-44	TRANSISTOR 2SD774-5	
Q4	8-729-177-44	TRANSISTOR 2SD774-5	
Q5	8-729-177-44	TRANSISTOR 2SD774-5	
Q6	8-729-177-44	TRANSISTOR 2SD774-5	
Q7	8-729-103-43	TRANSISTOR 2SB734	
Q8	8-729-178-54	TRANSISTOR 2SC2785	
Q9	8-729-178-54	TRANSISTOR 2SC2785	
Q10	8-729-313-42	TRANSISTOR 2SD1134	
Q11	8-729-600-60	TRANSISTOR 2SA1115P	
Q12	8-729-177-44	TRANSISTOR 2SD774-5	
Q13	8-729-178-54	TRANSISTOR 2SC2785	
Q14	8-729-178-54	TRANSISTOR 2SC2785	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-215-857-11	METAL OXIDE	10	5%	1W	F
R2	1-215-857-11	METAL OXIDE	10	5%	1W	F
R3	1-247-715-11	CARBON	1.5K	5%	1/4W	
R4	1-215-857-11	METAL OXIDE	10	5%	1W	F
R5	1-215-857-11	METAL OXIDE	10	5%	1W	F
R6	1-249-447-11	CARBON	1	5%	1/4W	F
R7	1-247-692-11	CARBON	22	5%	1/4W	
R8	1-249-418-11	CARBON	1.2K	5%	1/4W	
R9	1-249-382-11	CARBON	1.2	5%	1/4W	F
R10	1-249-447-11	CARBON	1	5%	1/4W	F
R11	1-247-692-11	CARBON	22	5%	1/4W	
R12	1-249-418-11	CARBON	1.2K	5%	1/4W	
R13	1-215-866-11	METAL OXIDE	330	5%	1W	F
R14	1-247-700-11	CARBON	100	5%	1/4W	
R15	1-247-709-11	CARBON	510	5%	1/4W	
R16	1-247-709-11	CARBON	510	5%	1/4W	
R17	1-247-700-11	CARBON	100	5%	1/4W	
R18	1-249-425-11	CARBON	4.7K	5%	1/4W	
R19	1-249-419-11	CARBON	1.5K	5%	1/4W	
R20	1-247-838-00	CARBON	2K	5%	1/4W	
R21	1-249-417-11	CARBON	1K	5%	1/4W	
R22	1-249-409-11	CARBON	220	5%	1/4W	
R23	1-249-417-11	CARBON	1K	5%	1/4W	
R24	1-249-421-11	CARBON	2.2K	5%	1/4W	
R25	1-249-409-11	CARBON	220	5%	1/4W	
R26	1-247-700-11	CARBON	100	5%	1/4W	
R27	1-247-713-11	CARBON	1K	5%	1/4W	
R28	1-247-713-11	CARBON	1K	5%	1/4W	
R29	1-247-700-11	CARBON	100	5%	1/4W	
R30	1-215-886-11	METAL OXIDE	100	5%	2W	F
R31	1-215-886-11	METAL OXIDE	100	5%	2W	F
R32	1-215-886-11	METAL OXIDE	100	5%	2W	F
R33	1-247-697-11	CARBON	56	5%	1/4W	F
R34	1-247-697-11	CARBON	56	5%	1/4W	F
R35	1-215-863-11	METAL OXIDE	100	5%	1W	F
R36	1-249-425-11	CARBON	4.7K	5%	1/4W	
R37	1-249-420-11	CARBON	1.8K	5%	1/4W	
R38	1-249-429-11	CARBON	10K	5%	1/4W	
R39	1-249-413-11	CARBON	470	5%	1/4W	
R40	1-215-453-00	METAL	22K	1%	1/6W	
R41	1-249-425-11	CARBON	4.7K	5%	1/4W	
R42	1-215-437-00	METAL	4.7K	1%	1/6W	
R43	1-215-435-00	METAL	3.9K	1%	1/6W	
R44	1-215-427-00	METAL	1.8K	1%	1/6W	
R45	1-247-713-11	CARBON	1K	5%	1/4W	
R46	1-249-417-11	CARBON	1K	5%	1/4W	
R47	1-216-732-11	METAL	820	1%	10W	
R48	1-215-866-11	METAL OXIDE	330	5%	1W	F
☒R52	⚠.	METAL OXIDE			2W	F
☒R53	⚠.	METAL			1/6W	
R54	1-215-901-00	METAL OXIDE	33K	5%	2W	F
R55	1-215-426-00	METAL	1.6K	1%	1/6W	
R60	1-249-420-11	CARBON	1.8K	5%	1/4W	
R61	1-249-420-11	CARBON	1.8K	5%	1/4W	
R62	1-249-429-11	CARBON	10K	5%	1/4W	
R63	1-249-413-11	CARBON	470	5%	1/4W	
R64	1-249-426-11	CARBON	5.6K	5%	1/4W	
R65	1-215-437-00	METAL	4.7K	1%	1/6W	
R66	1-215-453-00	METAL	22K	1%	1/6W	
☒R67	⚠ 1-214-917-21	METAL	150K	1%	1/2W	
☒R68	⚠ 1-215-437-91	METAL	4.7K	1%	1/6W	
R74	1-215-889-00	METAL OXIDE	330	5%	2W	F
R77	1-215-433-00	METAL	3.3K	1%	1/6W	
R78	1-215-433-00	METAL	3.3K	1%	1/6W	
R80	⚠ 1-202-663-35	SOLID	5.6M	10%	1/2W	
R81	1-215-461-00	METAL	47K	1%	1/6W	
R82	1-215-461-00	METAL	47K	1%	1/6W	
R83	1-215-461-00	METAL	47K	1%	1/6W	
R84	1-215-459-00	METAL	39K	1%	1/6W	
R85	1-215-449-00	METAL	15K	1%	1/6W	
R86	1-215-437-00	METAL	4.7K	1%	1/6W	
R87	1-249-405-11	CARBON	100	5%	1/4W	
R88	1-249-433-11	CARBON	22K	5%	1/4W	
R89	1-249-429-11	CARBON	10K	5%	1/4W	
R90	1-249-429-11	CARBON	10K	5%	1/4W	
R91	1-249-429-11	CARBON	10K	5%	1/4W	
R92	⚠ 1-217-295-11	WIREWOUND	5.6	10%	5W	F
R93	1-215-886-11	METAL OXIDE	100	5%	2W	F
R94	1-205-538-00	WIREWOUND	4.7	10%	10W	
R95	1-215-904-11	METAL OXIDE	100K	5%	2W	F
R96	1-215-904-11	METAL OXIDE	100K	5%	2W	F
R97	1-215-904-11	METAL OXIDE	100K	5%	2W	F

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

GA GB C

Ref.No.	Part No.	Description				Remark
R98	1-215-904-11	METAL OXIDE	100K	5%	2W	F

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV1	1-237-514-21	RES, ADJ, CERMET 500	
RV2	1-237-515-21	RES, ADJ, CERMET 1K	

RELAY

Ref.No.	Part No.	Description	Remark
RY1	⚠1-515-491-11	RELAY (POWER)	

TRANSFORMER

Ref.No.	Part No.	Description	Remark
T1	⚠1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)	
T2	⚠1-447-106-11	TRANSFORMER, DRIVE	
T3	⚠1-421-624-12	TRANSFORMER, CURRENT	
T4	⚠1-447-426-12	TRANSFORMER, CONVERTER	
T5	⚠1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)	
T6	⚠1-447-106-11	TRANSFORMER, DRIVE	
T7	⚠1-421-624-12	TRANSFORMER, CURRENT	

THERMISTOR

Ref.No.	Part No.	Description	Remark
TH1	⚠1-800-820-12	THERMISTOR, POWER	
THP1	⚠1-806-387-11	THERMISTOR (POSITIVE)	
THP2	⚠1-800-686-32	THERMISTOR (POSITIVE)	

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*1-627-679-11 GB BOARD (BVM-1315/BVM-1415P ONLY)
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*1-617-884-11 GB BOARD (BVM-1415PM ONLY)
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CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-123-380-00	ELECT	1MF	20%	50V	
C2	1-123-380-00	ELECT	1MF	20%	50V	

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-110-08	DIODE RD8.2ES-B2	
D3	8-719-911-19	DIODE 1SS119	
D4	8-719-911-19	DIODE 1SS119	
D5	8-719-911-19	DIODE 1SS119	
D6	8-719-110-08	DIODE RD8.2ES-B2	
D7	8-719-812-41	DIODE TLR124	
D8	8-719-911-19	DIODE 1SS119	
D9	8-719-911-19	DIODE 1SS119	
D10	8-719-812-41	DIODE TLR124	
D11	8-719-110-08	DIODE RD8.2ES-B2	
D12	8-719-911-19	DIODE 1SS119	
D13	8-719-911-19	DIODE 1SS119	
D14	8-719-911-19	DIODE 1SS119	
D15	8-719-911-19	DIODE 1SS119	
D16	8-719-911-19	DIODE 1SS119	
D17	8-719-110-08	DIODE RD8.2ES-B2	
D18	8-719-911-19	DIODE 1SS119	
D19	8-719-911-19	DIODE 1SS119	

CONNECTOR

Ref.No.	Part No.	Description	Remark
GA1	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-600-60	TRANSISTOR 2SA1115P	
Q2	8-729-178-54	TRANSISTOR 2SC2785	
Q3	8-729-600-60	TRANSISTOR 2SA1115P	
Q4	8-729-178-54	TRANSISTOR 2SC2785	
Q5	8-729-600-60	TRANSISTOR 2SA1115P	
Q6	8-729-600-60	TRANSISTOR 2SA1115P	
Q7	8-729-600-60	TRANSISTOR 2SA1115P	
Q8	8-729-178-54	TRANSISTOR 2SC2785	
Q9	8-729-600-60	TRANSISTOR 2SA1115P	
Q10	8-729-178-54	TRANSISTOR 2SC2785	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-427-11	CARBON	6.8K	5%	1/4W	
R2	1-249-428-11	CARBON	8.2K	5%	1/4W	
R3	1-249-429-11	CARBON	10K	5%	1/4W	
R4	1-249-427-11	CARBON	6.8K	5%	1/4W	
R5	1-249-420-11	CARBON	1.8K	5%	1/4W	
R6	1-249-427-11	CARBON	6.8K	5%	1/4W	
R7	1-249-420-11	CARBON	1.8K	5%	1/4W	
R8	1-249-429-11	CARBON	10K	5%	1/4W	
R9	1-249-427-11	CARBON	6.8K	5%	1/4W	
R10	1-249-428-11	CARBON	8.2K	5%	1/4W	
R11	1-249-424-11	CARBON	3.9K	5%	1/4W	
R12	1-249-421-11	CARBON	2.2K	5%	1/4W	
R13	1-249-425-11	CARBON	4.7K	5%	1/4W	
R14	1-249-421-11	CARBON	2.2K	5%	1/4W	
R15	1-249-424-11	CARBON	3.9K	5%	1/4W	
R16	1-249-421-11	CARBON	2.2K	5%	1/4W	
R17	1-249-425-11	CARBON	4.7K	5%	1/4W	
R18	1-249-421-11	CARBON	2.2K	5%	1/4W	
R19	1-249-429-11	CARBON	10K	5%	1/4W	
R20	1-249-429-11	CARBON	10K	5%	1/4W	
R21	1-249-429-11	CARBON	10K	5%	1/4W	
R22	1-249-423-11	CARBON	3.3K	5%	1/4W	
R23	1-249-423-11	CARBON	3.3K	5%	1/4W	
R24	1-249-429-11	CARBON	10K	5%	1/4W	
R25	1-249-429-11	CARBON	10K	5%	1/4W	

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*A-1330-902-A C BOARD, COMPLETE
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Ref.No.	Part No.	Description	Remark
	⚠1-526-819-11	SOCKET, PICTURE TUBE	
	*4-374-912-01	COVER (MAIN), CV VOL	
	*4-374-913-01	COVER (REAR LID), CV VOL	

CONNECTOR

Ref.No.	Part No.	Description	Remark
C1	*1-566-054-11	PIN, CONNECTOR 2P	
C2	*1-566-056-11	PIN, CONNECTOR 4P	
C3	*1-566-056-11	PIN, CONNECTOR 4P	
C4	*1-566-056-11	PIN, CONNECTOR 4P	
C5	*1-566-055-11	PIN, CONNECTOR 3P	
C6	*1-566-055-11	PIN, CONNECTOR 3P	
C7	*1-508-766-00	4P PLUG (M)	
C8	*1-508-786-00	2P PLUG (M)	

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-162-114-00	CERAMIC	0.0047MF		2KV	
C2	1-129-724-00	FILM	0.068MF	10%	630V	
C3	1-123-332-00	ELECT	47MF	20%	25V	
C4	1-162-114-00	CERAMIC	0.0047MF		2KV	
C5	1-162-114-00	CERAMIC	0.0047MF		2KV	
C6	1-123-332-00	ELECT	47MF	20%	25V	
C7	1-162-114-00	CERAMIC	0.0047MF		2KV	

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D3	8-719-911-19	DIODE 1SS119	
D4	8-719-911-19	DIODE 1SS119	

COIL

Ref.No.	Part No.	Description		Remark
L1	1-408-414-00	INDUCTOR	27UH	
L2	1-408-414-00	INDUCTOR	27UH	
L3	1-408-414-00	INDUCTOR	27UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-804-48	TRANSISTOR 2SC3675	
Q2	8-729-804-48	TRANSISTOR 2SC3675	
Q3	8-729-255-12	TRANSISTOR 2SC2551	
Q4	8-729-178-54	TRANSISTOR 2SC2785	
Q5	8-729-178-54	TRANSISTOR 2SC2785	
Q6	8-729-255-12	TRANSISTOR 2SC2551	
Q7	8-729-804-48	TRANSISTOR 2SC3675	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-202-818-00	SOLID	1K	10%	1/2W	
R2	1-202-818-00	SOLID	1K	10%	1/2W	
R3	1-202-818-00	SOLID	1K	10%	1/2W	
R4	1-249-433-11	CARBON	22K	5%	1/4W	
R5	1-202-818-00	SOLID	1K	10%	1/2W	
R6	1-202-818-00	SOLID	1K	10%	1/2W	
R7	1-249-433-11	CARBON	22K	5%	1/4W	
R8	1-202-818-00	SOLID	1K	10%	1/2W	
R9	1-202-818-00	SOLID	1K	10%	1/2W	
R10	1-249-433-11	CARBON	22K	5%	1/4W	
R11	1-202-719-00	SOLID	1M	10%	1/2W	
R12	1-202-719-00	SOLID	1M	10%	1/2W	
R13	1-202-735-00	SOLID	22M	10%	1/2W	
R14	1-249-417-11	CARBON	1K	5%	1/4W	
R15	1-202-721-00	SOLID	1.5M	10%	1/2W	
R16	1-202-848-00	SOLID	680K	10%	1/2W	
R17	1-249-438-11	CARBON	56K	5%	1/4W	
R18	1-202-719-00	SOLID	1M	10%	1/2W	
R19	1-249-429-11	CARBON	10K	5%	1/4W	
R20	1-249-430-11	CARBON	12K	5%	1/4W	
R21	1-249-429-11	CARBON	10K	5%	1/4W	
R22	1-249-427-11	CARBON	6.8K	5%	1/4W	
R23	1-202-725-00	SOLID	3.3M	10%	1/2W	
R24	1-202-734-00	SOLID	18M	10%	1/2W	
R25	1-202-729-00	SOLID	6.8M	10%	1/2W	
R26	1-247-887-00	CARBON	220K	5%	1/4W	
R27	1-249-417-11	CARBON	1K	5%	1/4W	
R28	1-202-818-00	SOLID	1K	10%	1/2W	
R29	1-202-818-00	SOLID	1K	10%	1/2W	
R30	1-202-818-00	SOLID	1K	10%	1/2W	
R31	1-249-417-11	CARBON	1K	5%	1/4W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV1	1-230-798-11	RES, ADJ, METAL GLAZE 90M	

SPARK GAP

Ref.No.	Part No.	Description	Remark
SG1	1-519-422-11	GAP, SPARK	
SG2	1-519-422-11	GAP, SPARK	
SG3	1-519-422-11	GAP, SPARK	
SG4	1-519-422-11	GAP, SPARK	
SG5	1-519-422-11	GAP, SPARK	
SG6	1-519-422-11	GAP, SPARK	

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*1-627-677-11 V BOARD
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Ref.No.	Part No.	Description	Remark
	1-563-265-11	CONNECTOR, MULTIPLE 10P	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-405-11	CARBON	100	5%	1/4W	
R2	1-249-405-11	CARBON	100	5%	1/4W	
R3	1-249-405-11	CARBON	100	5%	1/4W	
R4	1-249-405-11	CARBON	100	5%	1/4W	
R5	1-249-405-11	CARBON	100	5%	1/4W	
R6	1-249-405-11	CARBON	100	5%	1/4W	
R7	1-249-405-11	CARBON	100	5%	1/4W	

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*A-1345-800-A EB BOARD, COMPLETE
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Ref.No.	Part No.	Description	Remark
	*4-381-904-01	SPRING (C)	
	*4-381-907-01	INSULATOR (A)	

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-123-333-00	ELECT	100MF	20%	25V	
C2	1-123-938-00	ELECT	4.7MF	20%	200V	
C3	1-123-333-00	ELECT	100MF	20%	25V	
C4	1-102-978-00	CERAMIC	220PF	10%	50V	
C7	1-123-938-00	ELECT	4.7MF	20%	200V	
C8	1-136-157-00	FILM	0.022MF	5%	50V	

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-911-55	DIODE U05G	
D2	8-719-911-55	DIODE U05G	
D3	8-719-911-19	DIODE 1SS119	
D4	8-719-911-19	DIODE 1SS119	
D5	8-719-911-19	DIODE 1SS119	
D6	8-719-911-19	DIODE 1SS119	

CONNECTOR

Ref.No.	Part No.	Description	Remark
EB1	*1-566-058-11	PIN, CONNECTOR 6P	
EB2	*1-566-058-11	PIN, CONNECTOR 6P	
EB3	*1-566-055-11	PIN, CONNECTOR 3P	
EB4	*1-508-765-00	3P PLUG (M)	
EB5	*1-566-054-11	PIN, CONNECTOR 2P	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-697-92	TRANSISTOR 2SA979	
Q2	8-729-177-42	TRANSISTOR 2SD774-3	
Q3	8-729-309-36	TRANSISTOR 2SA893A	
Q4	8-729-309-08	TRANSISTOR 2SC1890A	
Q5	8-729-300-80	TRANSISTOR 2SB860	
Q6	8-729-300-70	TRANSISTOR 2SD1137	
Q7	8-729-386-12	TRANSISTOR 2SB861	
Q8	8-729-255-12	TRANSISTOR 2SC2551	
Q9	8-729-178-54	TRANSISTOR 2SC2785	
Q10	8-729-117-54	TRANSISTOR 2SA1175	

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-249-429-11	CARBON	10K	5%	1/4W	
R2	1-249-430-11	CARBON	12K	5%	1/4W	
R3	1-249-426-11	CARBON	5.6K	5%	1/4W	
R4	1-216-465-11	METAL OXIDE	27K	5%	2W	F
R5	1-247-802-11	CARBON	62	5%	1/4W	
R6	1-249-414-11	CARBON	560	5%	1/4W	
R7	1-249-448-11	CARBON	1.2	5%	1/4W	F
R8	1-249-448-11	CARBON	1.2	5%	1/4W	F
R9	1-215-866-11	METAL OXIDE	330	5%	1W	F
R10	1-216-356-00	METAL OXIDE	3.9	5%	1W	F

Ref.No.	Part No.	Description				Remark
R11	1-249-429-11	CARBON	10K	5%	1/4W	
R12	1-249-425-11	CARBON	4.7K	5%	1/4W	
R13	1-247-719-11	CARBON	3.3K	5%	1/4W	F
R14	1-247-700-11	CARBON	100	5%	1/4W	F
R15	1-215-873-00	METAL OXIDE	4.7K	5%	1W	F
R16	1-249-429-11	CARBON	10K	5%	1/4W	
R17	1-249-429-11	CARBON	10K	5%	1/4W	
R18	1-249-405-11	CARBON	100	5%	1/4W	
R19	1-247-688-11	CARBON	10	5%	1/4W	F
R20	1-247-688-11	CARBON	10	5%	1/4W	F

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*A-1345-801-A D BOARD, COMPLETE
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CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-136-153-00	FILM	0.01MF	5%	50V	
C2	1-136-165-00	FILM	0.1MF	5%	50V	
C3	1-126-094-11	ELECT	4.7MF	20%	16V	
C4	1-124-255-00	ELECT	1MF	20%	50V	
C5	1-124-255-00	ELECT	1MF	20%	50V	
C6	1-124-255-00	ELECT	1MF	20%	50V	
C7	1-124-255-00	ELECT	1MF	20%	50V	
C8	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C9	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C10	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C11	1-102-973-00	CERAMIC	100PF	5%	50V	
C12	1-136-153-00	FILM	0.01MF	5%	50V	
C13	1-136-153-00	FILM	0.01MF	5%	50V	
C14	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C15	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C16	1-124-255-00	ELECT	1MF	20%	50V	
C17	1-102-820-00	CERAMIC	330PF	5%	50V	
C18	1-136-153-00	FILM	0.01MF	5%	50V	
C19	1-124-255-00	ELECT	1MF	20%	50V	
C20	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C21	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C22	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C23	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C24	1-136-153-00	FILM	0.01MF	5%	50V	
C25	1-136-165-00	FILM	0.1MF	5%	50V	
C26	1-126-157-11	ELECT	10MF	20%	16V	
C27	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C28	1-124-234-00	ELECT	22MF	20%	16V	
C29	1-130-475-00	MYLAR	0.0022MF	5%	50V	
C30	1-130-477-00	FILM	0.0033MF	5%	50V	
C31	1-102-963-00	CERAMIC	33PF	5%	50V	
C32	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C33	1-124-234-00	ELECT	22MF	20%	16V	
C34	1-102-978-00	CERAMIC	220PF	5%	50V	
C36	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C37	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C100	1-123-333-00	ELECT	100MF	20%	25V	
C101	1-123-332-00	ELECT	47MF	20%	16V	
C102	1-126-157-11	ELECT	10MF	20%	16V	
C103	1-126-157-11	ELECT	10MF	20%	16V	
C104	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C105	1-126-157-11	ELECT	10MF	20%	16V	
C106	1-126-157-11	ELECT	10MF	20%	16V	
C200	1-123-333-00	ELECT	100MF	20%	25V	
C201	1-123-332-00	ELECT	47MF	20%	16V	
C202	1-126-157-11	ELECT	10MF	20%	16V	
C203	1-126-157-11	ELECT	10MF	20%	16V	
C204	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C300	1-123-332-00	ELECT	47MF	20%	25V	
C301	1-123-332-00	ELECT	47MF	20%	16V	
C302	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C303	1-126-157-11	ELECT	10MF	20%	16V	
C304	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C305	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C400	1-123-332-00	ELECT	47MF	20%	25V	
C401	1-123-332-00	ELECT	47MF	20%	16V	
C402	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C403	1-126-157-11	ELECT	10MF	20%	16V	
C405	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C406	1-126-157-11	ELECT	10MF	20%	16V	

DIODE

Ref.No.	Part No.	Description
D1	8-719-911-19	DIODE 1SS119
D2	8-719-911-19	DIODE 1SS119
D3	8-719-109-99	DIODE RD7.5ES-B
D4	8-719-109-83	DIODE RD5.1ES-B
D8	8-719-911-19	DIODE 1SS119

CONNECTOR

Ref.No.	Part No.	Description
D1	*1-566-060-11	PIN, CONNECTOR 8P
D2	*1-566-057-11	PIN, CONNECTOR 5P
D3	*1-566-058-11	PIN, CONNECTOR 6P
D4	*1-566-058-11	PIN, CONNECTOR 6P
D5	*1-566-055-11	PIN, CONNECTOR 3P
D6	*1-566-055-11	PIN, CONNECTOR 3P

IC

Ref.No.	Part No.	Description
IC1	8-759-909-70	IC CX23025
IC2	8-752-033-68	IC CXA1268P
IC3	8-759-208-10	IC TC4053BPHB
IC4	8-759-145-58	IC UPC4558C
IC5	8-759-700-08	IC NJM4558S
IC6	8-759-208-14	IC TC4066BPHB
IC7	8-759-145-58	IC UPC4558C
IC8	8-759-208-10	IC TC4053BPHB
IC9	8-759-145-58	IC UPC4558C
IC10	8-759-990-82	IC TL082CP
IC11	8-759-145-58	IC UPC4558C
IC12	8-759-145-58	IC UPC4558C
IC13	8-759-990-82	IC TL082CP
IC14	8-759-729-03	IC NJM2903D
IC15	8-759-729-03	IC NJM2903D
IC16	8-759-145-58	IC UPC4558C
IC17	8-759-729-03	IC NJM2903D
IC18	8-759-240-69	IC TC4069UBP
IC19	8-759-100-60	IC UPC1377C
IC20	8-759-170-12	IC UPC78M12H
IC21	8-759-105-40	IC UPC79M12H
IC22	8-759-170-05	IC UPC78M05H
IC23	8-759-105-38	IC UPC79M05H
IC24	8-759-208-10	IC TC4053BPHB
IC25	8-759-990-82	IC TL082CP

COIL

Ref.No.	Part No.	Description	
L1	1-410-068-11	INDUCTOR	5.6MMH

TRANSISTOR

Ref.No.	Part No.	Description
Q1	8-729-900-89	TRANSISTOR DTC144ES
Q6	8-729-178-54	TRANSISTOR 2SC2785
Q7	8-729-178-54	TRANSISTOR 2SC2785
Q8	8-729-900-65	TRANSISTOR DTA144ES

Ref.No.	Part No.	Description				Remark
Q9	8-729-178-54	TRANSISTOR 2SC2785				
Q10	8-729-900-89	TRANSISTOR DTC144ES				
		RESISTOR				
R1	1-249-441-11	CARBON	100K	5%	1/4W	
R2	1-249-423-11	CARBON	3.3K	5%	1/4W	
R3	1-249-423-11	CARBON	3.3K	5%	1/4W	
R4	1-249-425-11	CARBON	4.7K	5%	1/4W	
R5	1-249-429-11	CARBON	10K	5%	1/4W	
R6	1-249-429-11	CARBON	10K	5%	1/4W	
R7	1-249-423-11	CARBON	3.3K	5%	1/4W	
R8	1-249-431-11	CARBON	15K	5%	1/4W	
R9	1-249-431-11	CARBON	15K	5%	1/4W	
R10	1-249-431-11	CARBON	15K	5%	1/4W	
R11	1-249-431-11	CARBON	15K	5%	1/4W	
R12	1-249-441-11	CARBON	100K	5%	1/4W	
R13	1-249-405-11	CARBON	100K	5%	1/4W	
R14	1-249-429-11	CARBON	10K	5%	1/4W	
R15	1-249-425-11	CARBON	4.7K	5%	1/4W	
R16	1-249-429-11	CARBON	10K	5%	1/4W	
R17	1-249-429-11	CARBON	10K	5%	1/4W	
R18	1-249-441-11	CARBON	100K	5%	1/4W	
R19	1-249-429-11	CARBON	10K	5%	1/4W	
R20	1-249-429-11	CARBON	10K	5%	1/4W	
R21	1-247-891-00	CARBON	330K	5%	1/4W	
R22	1-247-903-00	CARBON	1M	5%	1/4W	
R23	1-249-439-11	CARBON	68K	5%	1/4W	
R25	1-247-891-00	CARBON	330K	5%	1/4W	
R26	1-249-439-11	CARBON	68K	5%	1/4W	
R31	1-249-429-11	CARBON	10K	5%	1/4W	
R32	1-249-429-11	CARBON	10K	5%	1/4W	
R34	1-249-429-11	CARBON	10K	5%	1/4W	
R35	1-249-429-11	CARBON	10K	5%	1/4W	
R36	1-249-441-11	CARBON	100K	5%	1/4W	
R37	1-249-433-11	CARBON	22K	5%	1/4W	
R38	1-249-431-11	CARBON	15K	5%	1/4W	
R39	1-249-435-11	CARBON	33K	5%	1/4W	
R40	1-249-433-11	CARBON	22K	5%	1/4W	
R41	1-249-418-11	CARBON	1.2K	5%	1/4W	
R42	1-249-441-11	CARBON	100K	5%	1/4W	
R43	1-249-429-11	CARBON	10K	5%	1/4W	
R44	1-249-441-11	CARBON	100K	5%	1/4W	
R45	1-249-441-11	CARBON	100K	5%	1/4W	
R46	1-247-887-00	CARBON	220K	5%	1/4W	
R47	1-249-439-11	CARBON	68K	5%	1/4W	
R48	1-249-439-11	CARBON	68K	5%	1/4W	
R49	1-249-426-11	CARBON	5.6K	5%	1/4W	
R50	1-249-429-11	CARBON	10K	5%	1/4W	
R51	1-249-429-11	CARBON	10K	5%	1/4W	
R52	1-249-429-11	CARBON	10K	5%	1/4W	
R53	1-249-429-11	CARBON	10K	5%	1/4W	
R54	1-249-429-11	CARBON	10K	5%	1/4W	
R55	1-249-433-11	CARBON	22K	5%	1/4W	
R56	1-249-434-11	CARBON	27K	5%	1/4W	
R57	1-249-429-11	CARBON	10K	5%	1/4W	
R59	1-249-439-11	CARBON	68K	5%	1/4W	
R60	1-247-895-00	CARBON	470K	5%	1/4W	
R61	1-249-429-11	CARBON	10K	5%	1/4W	
R62	1-247-895-00	CARBON	470K	5%	1/4W	
R63	1-249-429-11	CARBON	10K	5%	1/4W	
R64	1-249-441-11	CARBON	100K	5%	1/4W	
R65	1-249-429-11	CARBON	10K	5%	1/4W	
R66	1-249-429-11	CARBON	10K	5%	1/4W	
R70	1-249-429-11	CARBON	10K	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R71	1-249-429-11	CARBON	10K	5%	1/4W	
R72	1-249-429-11	CARBON	10K	5%	1/4W	
R73	1-249-429-11	CARBON	10K	5%	1/4W	
R74	1-249-429-11	CARBON	10K	5%	1/4W	
R75	1-249-439-11	CARBON	68K	5%	1/4W	
R76	1-249-430-11	CARBON	12K	5%	1/4W	
R77	1-249-429-11	CARBON	10K	5%	1/4W	
R78	1-249-439-11	CARBON	68K	5%	1/4W	
R79	1-249-429-11	CARBON	10K	5%	1/4W	
R80	1-249-430-11	CARBON	12K	5%	1/4W	
R81	1-249-423-11	CARBON	3.3K	5%	1/4W	
R82	1-249-417-11	CARBON	1K	5%	1/4W	
R83	1-249-429-11	CARBON	10K	5%	1/4W	
R84	1-249-426-11	CARBON	5.6K	5%	1/4W	
R85	1-249-428-11	CARBON	8.2K	5%	1/4W	
R86	1-249-423-11	CARBON	3.3K	5%	1/4W	
R87	1-249-417-11	CARBON	1K	5%	1/4W	
R88	1-249-426-11	CARBON	5.6K	5%	1/4W	
R89	1-249-439-11	CARBON	68K	5%	1/4W	
R90	1-249-429-11	CARBON	10K	5%	1/4W	
R91	1-249-430-11	CARBON	12K	5%	1/4W	
R92	1-249-419-11	CARBON	1.5K	5%	1/4W	
R93	1-249-429-11	CARBON	10K	5%	1/4W	
R94	1-249-429-11	CARBON	10K	5%	1/4W	
R95	1-249-429-11	CARBON	10K	5%	1/4W	
R96	1-249-425-11	CARBON	4.7K	5%	1/4W	
R97	1-249-417-11	CARBON	1K	5%	1/4W	
R98	1-249-425-11	CARBON	4.7K	5%	1/4W	
R99	1-249-429-11	CARBON	10K	5%	1/4W	
R100	1-249-417-11	CARBON	1K	5%	1/4W	
R101	1-249-439-11	CARBON	68K	5%	1/4W	
R102	1-249-415-11	CARBON	680	5%	1/4W	
R103	1-249-423-11	CARBON	3.3K	5%	1/4W	
R104	1-249-425-11	CARBON	4.7K	5%	1/4W	
R105	1-249-430-11	CARBON	12K	5%	1/4W	
R106	1-249-417-11	CARBON	1K	5%	1/4W	
R107	1-249-429-11	CARBON	10K	5%	1/4W	
R108	1-249-429-11	CARBON	10K	5%	1/4W	
R109	1-249-417-11	CARBON	1K	5%	1/4W	
R110	1-249-417-11	CARBON	1K	5%	1/4W	
R111	1-249-417-11	CARBON	1K	5%	1/4W	
R112	1-249-417-11	CARBON	1K	5%	1/4W	
R113	1-249-435-11	CARBON	33K	5%	1/4W	
R114	1-249-441-11	CARBON	100K	5%	1/4W	
R115	1-249-433-11	CARBON	22K	5%	1/4W	
R116	1-249-433-11	CARBON	22K	5%	1/4W	
R117	1-249-425-11	CARBON	4.7K	5%	1/4W	
R118	1-249-434-11	CARBON	27K	5%	1/4W	
R119	1-249-435-11	CARBON	33K	5%	1/4W	
R120	1-249-429-11	CARBON	10K	5%	1/4W	
R121	1-249-429-11	CARBON	10K	5%	1/4W	
R122	1-249-417-11	CARBON	1K	5%	1/4W	
R130	1-215-862-11	METAL OXIDE	68	5%	1W	F
R131	1-215-862-11	METAL OXIDE	68	5%	1W	F
R132	1-247-713-11	CARBON	1K	5%	1/4W	
R133	1-247-713-11	CARBON	1K	5%	1/4W	
R134	1-247-713-11	CARBON	1K	5%	1/4W	
R135	1-247-713-11	CARBON	1K	5%	1/4W	
R136	1-247-713-11	CARBON	1K	5%	1/4W	
		VARIABLE RESISTOR				
RV1	1-237-518-21	RES, ADJ, CERMET 10K				
RV2	1-237-518-21	RES, ADJ, CERMET 10K				
RV3	1-237-518-21	RES, ADJ, CERMET 10K				

Ref.No.	Part No.	Description			Remark
RV4	1-237-518-21	RES, ADJ, CERMET 10K			
RV5	1-237-518-21	RES, ADJ, CERMET 10K			
RV6	1-237-518-21	RES, ADJ, CERMET 10K			
RV7	1-237-518-21	RES, ADJ, CERMET 10K			
RV8	1-237-518-21	RES, ADJ, CERMET 10K			
RV9	1-237-518-21	RES, ADJ, CERMET 10K			
RV10	1-237-503-21	RES, ADJ, CERMET 10K			
RV11	1-237-518-21	RES, ADJ, CERMET 10K			
RV12	1-237-518-21	RES, ADJ, CERMET 10K			
RV13	1-237-518-21	RES, ADJ, CERMET 10K			
RV14	1-237-503-21	RES, ADJ, CERMET 10K			
RV15	1-237-518-21	RES, ADJ, CERMET 10K			
RV16	1-237-518-21	RES, ADJ, CERMET 10K			
RV17	1-237-503-21	RES, ADJ, CERMET 10K			
RV18	1-237-518-21	RES, ADJ, CERMET 10K			
RV19	1-237-518-21	RES, ADJ, CERMET 10K			
RV20	1-237-503-21	RES, ADJ, CERMET 10K			
RV21	1-237-518-21	RES, ADJ, CERMET 10K			
RV22	1-237-518-21	RES, ADJ, CERMET 10K			
RV23	1-237-518-21	RES, ADJ, CERMET 10K			
RV24	1-237-518-21	RES, ADJ, CERMET 10K			
RV25	1-237-517-21	RES, ADJ, CERMET 5K			
RV26	1-237-503-21	RES, ADJ, CERMET 10K			
RV27	1-237-518-21	RES, ADJ, CERMET 10K			
RV28	1-237-518-21	RES, ADJ, CERMET 10K			

SWITCH

S1	1-554-482-00	SWITCH, SLIDE

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*A-1345-802-A	EA BOARD, COMPLETE ******************
*4-381-904-01	SPRING (C)
*4-381-907-01	INSULATOR (A)
*4-381-908-01	INSULATOR (B)

CAPACITOR

C1	1-102-963-00	CERAMIC	33PF	5%	50V
C2	1-123-343-00	ELECT	33MF	20%	25V
C3	1-124-046-00	ELECT	10MF		160V
C4	1-101-361-00	CERAMIC	150PF	5%	50V
C5	1-123-343-00	ELECT	33MF	20%	25V
C6	1-124-046-00	ELECT	10MF		160V
C7	1-136-136-00	FILM	0.24MF	5%	200V
C8	1-136-106-00	FILM	0.36MF	5%	200V
C9	1-136-337-11	FILM	3.3MF	10%	100V
C10	1-124-046-00	ELECT	10MF		160V
C11	1-108-700-11	MYLAR	0.047MF	10%	200V
C12	1-108-692-81	MYLAR	0.01MF	10%	200V
C13	1-136-165-00	FILM	0.1MF	5%	50V
C14	1-102-074-00	CERAMIC	1000PF	10%	50V
C15	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C16	1-102-973-00	CERAMIC	100PF	10%	50V
C17	1-123-356-00	ELECT	10MF	20%	25V
C18	1-123-356-00	ELECT	10MF	20%	16V
C19	1-123-330-00	ELECT	22MF	20%	16V
C20	1-136-169-00	FILM	0.22MF	5%	50V
C21	1-123-319-51	ELECT	47MF	205	16V
C23	1-136-161-00	FILM	0.047MF	5%	50V
C24	1-108-700-11	MYLAR	0.047MF	10%	200V
C25	1-162-117-00	CERAMIC	100PF	10%	500V
C26	1-124-046-00	ELECT	10MF		160V
C27	1-123-024-00	ELECT	33MF		160V

Ref.No.	Part No.	Description			Remark
C28	1-136-064-00	FILM	0.002MF	3%	2KV
	*4-341-751-01	EYELET; C28			
C29	1-136-065-00	FILM	0.0027MF	3%	2KV
C30	1-123-382-00	ELECT	33MF	20%	50V
C31	1-123-382-00	ELECT	33MF	20%	50V
C34	1-161-051-00	CERAMIC	0.01MF	10%	50V
C35	1-162-114-00	CERAMIC	0.0047MF		2KV
C36	1-108-692-81	MYLAR	0.01MF	10%	200V
C37	1-102-978-00	CERAMIC	220PF	5%	50V
C50	1-136-165-00	FILM	0.1MF	5%	50V
C51	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C52	1-102-973-00	CERAMIC	100PF	10%	50V
C53	1-123-356-00	ELECT	10MF	20%	25V
C54	1-123-330-00	ELECT	22MF	20%	16V
C55	1-123-356-00	ELECT	10MF	20%	16V
C56	1-123-369-00	ELECT	4.7MF	20%	25V
C57	1-123-332-00	ELECT	47MF	20%	16V
C58	1-136-161-00	FILM	0.047MF	5%	50V
C59	1-108-700-11	MYLAR	0.047MF	10%	200V
C60	1-162-117-00	CERAMIC	100PF	10%	500V
C61	1-123-024-00	ELECT	33MF		160V
C62	1-136-169-00	FILM	0.22MF	5%	50V
C63	1-108-700-11	MYLAR	0.047MF	10%	200V
C64	1-162-117-00	CERAMIC	100PF	10%	500V
C65	1-136-069-00	FILM	0.0044MF	3%	2KV
	*4-341-751-01	EYELET; C65			
C66	1-136-069-00	FILM	0.0044MF	3%	2KV
	*4-341-751-01	EYELET; C66			
C67	1-162-134-11	CERAMIC	470PF	10%	2KV
	*4-341-751-01	EYELET; C67			
C68	1-136-111-00	FILM	1MF	5%	200V
	*4-341-751-01	EYELET; C68			
C69	1-102-973-00	CERAMIC	100PF	10%	50V
C70	1-123-938-00	ELECT	4.7MF	20%	200V
C71	1-123-356-00	ELECT	10MF	20%	16V
C72	1-102-963-00	CERAMIC	33PF	5%	50V
C73	1-108-634-11	MYLAR	0.047MF	10%	100V
C74	1-123-356-00	ELECT	10MF	20%	16V
C75	1-161-051-00	CERAMIC	0.01MF	10%	50V
C76	1-123-356-00	ELECT	10MF	20%	50V
C77	1-123-330-00	ELECT	22MF	20%	25V
C78	1-136-165-00	FILM	0.1MF	5%	50V
C79	1-123-369-00	ELECT	4.7MF	20%	25V
C80	1-136-165-00	FILM	0.1MF	5%	50V
C81	1-123-330-00	ELECT	22MF	20%	25V
C82	1-161-051-00	CERAMIC	0.01MF	10%	50V
C83	1-123-356-00	ELECT	10MF	20%	50V
C84	1-123-330-00	ELECT	22MF	20%	16V
C85	1-136-165-00	FILM	0.1MF	5%	50V
C86	1-136-165-00	FILM	0.1MF	5%	50V
C87	1-108-692-81	MYLAR	0.01MF	10%	200V
C88	1-108-692-81	MYLAR	0.01MF	10%	200V
C89	1-162-117-00	CERAMIC	100PF	10%	500V

DIODE

D1	8-719-110-31	DIODE RD12ES-B2
D3	8-719-911-19	DIODE 1SS119
D4	8-719-911-19	DIODE 1SS119
D5	8-719-300-76	DIODE RH-1A
D6	8-719-110-03	DIODE RD7.5ES-B2
D7	8-719-300-76	DIODE RH-1A
D8	8-719-928-08	DIODE ERD28-08S
D9	8-719-300-76	DIODE RH-1A
D10	8-719-300-76	DIODE RH-1A
D12	8-719-901-19	DIODE V11N
D13	8-719-300-76	DIODE RH-1A
D14	8-719-300-76	DIODE RH-1A
D15	8-719-300-76	DIODE RH-1A
D16	8-719-300-76	DIODE RH-1A

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

Ref.No.	Part No.	Description	Remark
D17	8-719-110-31	DIODE RD12ES-B2	
D19	8-719-911-19	DIODE 1SS119	
D20	8-719-911-19	DIODE 1SS119	
D24	⚠8-759-157-40	IC UPC574J	
D25	8-719-911-19	DIODE 1SS119	
D26	8-719-911-19	DIODE 1SS119	
D27	8-719-000-28	THYRISTOR CR02AM-8	
D28	8-719-911-19	DIODE 1SS119	
D29	⚠8-759-157-40	IC UPC574J	
D30	8-719-911-19	DIODE 1SS119	
D31	8-719-300-76	DIODE RH-1A	
D32	8-719-300-76	DIODE RH-1A	
D33	8-719-300-76	DIODE RH-1A	

CONNECTOR

Ref.No.	Part No.	Description	Remark
EA1	*1-566-058-11	PIN, CONNECTOR 6P	
EA2	*1-566-055-11	PIN, CONNECTOR 3P	
EA3	*1-566-057-11	PIN, CONNECTOR 5P	
EA4	*1-566-059-11	PIN, CONNECTOR 7P	
EA5	*1-566-056-11	PIN, CONNECTOR 4P	
EA6	*1-566-055-11	PIN, CONNECTOR 3P	
EA7	*1-566-057-11	PIN, CONNECTOR 5P	
EA8	*1-566-055-11	PIN, CONNECTOR 3P	
EA9	*1-566-058-11	PIN, CONNECTOR 6P	
EA10	*1-508-766-00	4P PLUG (M)	
EA11	*1-508-767-00	5P PLUG	
EA12	*1-508-786-00	2P PLUG (M)	
EA13	*1-564-038-00	CONNECTOR PLUG, DY (MINI) 6P	
EA14	*1-508-765-00	3P PLUG (M)	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-100-75	IC UPC1394C	
IC2	8-759-100-75	IC UPC1394C	
IC3	8-759-990-82	IC TL082CP	
IC4	8-759-729-03	IC NJM2903D	
IC5	8-759-145-58	IC UPC4558C	

COIL

Ref.No.	Part No.	Description	Remark
L1	1-459-433-00	COIL (WITH CORE)	
L2	1-459-433-00	COIL (WITH CORE)	
L3	1-459-433-00	COIL (WITH CORE)	
L4	1-459-111-00	COIL, DRAM CORE (CDI)	
L5	1-459-111-00	COIL, DRAM CORE (CDI)	
L6	1-459-087-00	COIL, HCC DUST CORE 3.9MMH	
L7	1-459-215-00	COIL (WITH CORE)	
L8	1-459-207-00	COIL, CORE	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-117-54	TRANSISTOR 2SA1175	
Q2	8-729-697-92	TRANSISTOR 2SA979	
Q3	8-729-177-42	TRANSISTOR 2SD774-3	
Q4	8-729-217-33	TRANSISTOR 2SC1173	
Q5	8-729-247-33	TRANSISTOR 2SA473	
Q6	8-729-168-82	TRANSISTOR 2SC2688	
Q7	8-729-175-22	TRANSISTOR 2SC2752	
Q8	8-729-255-12	TRANSISTOR 2SC2551	
Q9	8-729-117-54	TRANSISTOR 2SA1175	
Q10	8-729-168-82	TRANSISTOR 2SC2688	
Q12	8-729-313-42	TRANSISTOR 2SD1134	
Q13	8-729-385-82	TRANSISTOR 2SB858	
Q14	8-729-168-82	TRANSISTOR 2SC2688	

Ref.No.	Part No.	Description	Remark
Q15	8-729-200-17	TRANSISTOR 2SA1091	
Q16	8-729-225-34	TRANSISTOR 2SC2534	
Q17	8-729-168-82	TRANSISTOR 2SC2688	
Q19	8-729-117-54	TRANSISTOR 2SA1175	
Q20	8-729-178-54	TRANSISTOR 2SC2785	

RESISTOR

Ref.No.	Part No.	Description				Remark
JW4	1-247-713-11	CARBON	1K	5%	1/4W	
R1	1-247-721-11	CARBON	4.7K	5%	1/4W	
R2	1-249-422-11	CARBON	2.7K	5%	1/4W	
R3	1-249-469-11	CARBON	100K	5%	1/4W	
R4	1-249-435-11	CARBON	33K	5%	1/4W	
R5	1-249-429-11	CARBON	10K	5%	1/4W	
R6	1-249-429-11	CARBON	10K	5%	1/4W	
R7	1-249-429-11	CARBON	10K	5%	1/4W	
R8	1-249-421-11	CARBON	2.2K	5%	1/4W	
R9	1-249-431-11	CARBON	15K	5%	1/4W	
R10	1-249-441-11	CARBON	100K	5%	1/4W	
R11	1-249-417-11	CARBON	1K	5%	1/4W	
R12	1-249-421-11	CARBON	2.2K	5%	1/4W	
R13	1-249-448-11	CARBON	1.2	5%	1/4W	F
R14	1-249-448-11	CARBON	1.2	5%	1/4W	F
R15	1-215-880-00	METAL OXIDE	10	5%	2W	F
R16	1-249-429-11	CARBON	10K	5%	1/4W	
R17	1-249-429-11	CARBON	10K	5%	1/4W	
R18	1-215-898-11	METAL OXIDE	10K	5%	2W	F
R19	1-216-357-00	METAL OXIDE	4.7	5%	1W	F
R20	1-249-417-11	CARBON	1K	5%	1/4W	
R21	1-249-422-11	CARBON	2.7K	5%	1/4W	
R22	1-249-422-11	CARBON	2.7K	5%	1/4W	
R23	1-249-425-11	CARBON	4.7K	5%	1/4W	
R24	1-249-435-11	CARBON	33K	5%	1/4W	
R25	1-249-437-11	CARBON	47K	5%	1/4W	
R26	1-249-429-11	CARBON	10K	5%	1/4W	
R27	1-249-429-11	CARBON	10K	5%	1/4W	
R28	1-249-435-11	CARBON	33K	5%	1/4W	
R29	1-249-427-11	CARBON	6.8K	5%	1/4W	
R30	1-249-429-11	CARBON	10K	5%	1/4W	
R31	1-215-432-00	METAL	3K	1%	1/6W	
R32	1-215-433-00	METAL	3.3K	1%	1/6W	
R34	1-249-417-11	CARBON	1K	5%	1/4W	
R35	1-249-429-11	CARBON	10K	5%	1/4W	
R37	1-249-429-11	CARBON	10K	5%	1/4W	
R38	1-249-429-11	CARBON	10K	5%	1/4W	
R39	1-215-898-11	METAL OXIDE	10K	5%	2W	F
R40	1-215-859-00	METAL OXIDE	22	5%	1W	F
R41	1-216-349-00	METAL OXIDE	1	5%	1W	F
R42	1-212-956-00	FUSIBLE	8.2	5%	1/2W	F
R43	1-249-417-11	CARBON	1K	5%	1/4W	
R44	1-215-475-00	METAL	180K	1%	1/6W	
R47	1-215-445-00	METAL	10K	1%	1/6W	
R48	1-247-725-11	CARBON	10K	5%	1/4W	
R49	1-249-448-11	CARBON	1.2	5%	1/4W	F
R50	1-249-429-11	CARBON	10K	5%	1/4W	
R51	1-249-425-11	CARBON	4.7K	5%	1/4W	
R52	1-247-700-11	CARBON	100	5%	1/4W	
R53	1-215-886-11	METAL OXIDE	100	5%	2W	F
R54	1-212-998-00	FUSIBLE	470	5%	1/2W	F
R60	1-249-417-11	CARBON	1K	5%	1/4W	
R61	1-249-433-11	CARBON	22K	5%	1/4W	
R62	1-249-433-11	CARBON	22K	5%	1/4W	
R63	1-249-441-11	CARBON	100K	5%	1/4W	

EA **HC** **HE**

W **HA** **HB**

- The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
R64	1-247-895-00	CARBON	470K	5%	1/4W	
R65	1-249-437-11	CARBON	47K	5%	1/4W	
R66	1-249-429-11	CARBON	10K	5%	1/4W	
R67	1-249-429-11	CARBON	10K	5%	1/4W	
R68	1-249-434-11	CARBON	27K	5%	1/4W	
R69	1-249-427-11	CARBON	6.8K	5%	1/4W	
R70	1-249-417-11	CARBON	1K	5%	1/4W	
R71	1-215-436-00	METAL	4.3K	1%	1/6W	
⧓R72 ⚠	[illegible]	METAL	[illegible]	[illegible]	1/6W	
R73	1-215-450-00	METAL	16K	1%	1/6W	
R74	1-215-439-00	METAL	5.6K	1%	1/6W	
⧓R75 ⚠	[illegible]	METAL	[illegible]	[illegible]	1/6W	
R76	1-249-423-11	CARBON	3.3K	5%	1/4W	
R77	1-247-887-00	CARBON	220K	5%	1/4W	
R78	1-249-437-11	CARBON	47K	5%	1/4W	
R79	1-249-429-11	CARBON	10K	5%	1/4W	
R80	1-249-429-11	CARBON	10K	5%	1/4W	
R81	1-215-898-11	METAL OXIDE	10K	5%	2W	F
R82	1-215-857-11	METAL OXIDE	10	5%	1W	F
R83	1-216-348-00	METAL OXIDE	0.82	5%	1W	F
R84	1-249-417-11	CARBON	1K	5%	1/4W	
R85	1-249-417-11	CARBON	1K	5%	1/4W	
R86	1-215-923-00	METAL OXIDE	10K	5%	3W	F
R87	1-216-353-00	METAL OXIDE	2.2	5%	1W	F
R88	1-249-441-11	CARBON	100K	5%	1/4W	
R89	1-249-431-11	CARBON	15K	5%	1/4W	
R90	1-249-417-11	CARBON	1K	5%	1/4W	
R91	1-249-425-11	CARBON	4.7K	5%	1/4W	
R92	1-249-441-11	CARBON	100K	5%	1/4W	
R93	1-249-422-11	CARBON	2.7K	5%	1/4W	
R94	1-249-435-11	CARBON	33K	5%	1/4W	
R95	1-249-429-11	CARBON	10K	5%	1/4W	
R96	1-249-421-11	CARBON	2.2K	5%	1/4W	
R97	1-249-393-11	CARBON	10	5%	1/4W	
R98	1-249-429-11	CARBON	10K	5%	1/4W	
R99	1-249-441-11	CARBON	100K	5%	1/4W	
R100	1-249-429-11	CARBON	10K	5%	1/4W	
R101	1-249-429-11	CARBON	10K	5%	1/4W	
R102	1-215-898-11	METAL OXIDE	10K	5%	2W	F
R103	1-215-898-11	METAL OXIDE	10K	5%	2W	F
R104	1-249-423-11	CARBON	3.3K	5%	1/4W	
R105	1-215-455-00	METAL	27K	1%	1/6W	
⧓R106 ⚠	[illegible]	METAL	[illegible]	[illegible]	1/6W	
R107	1-215-456-00	METAL	30K	1%	1/6W	
⧓R108 ⚠	[illegible]	METAL	[illegible]	[illegible]	1/6W	
R109	1-215-459-00	METAL	39K	1%	1/6W	
R110	1-215-469-00	METAL	100K	1%	1/6W	
R111	1-249-441-11	CARBON	100K	5%	1/4W	
R112	1-249-423-11	CARBON	3.3K	5%	1/4W	
R113	1-215-455-00	METAL	27K	1%	1/6W	
R114	1-215-437-00	METAL	4.7K	1%	1/6W	
⧓R115 ⚠	[illegible]	METAL	[illegible]	[illegible]	1/6W	
R116	1-215-486-00	METAL	510K	1%	1/6W	
R117	1-215-453-00	METAL	22K	1%	1/6W	
R118	1-215-469-00	METAL	100K	1%	1/6W	
R119	1-215-437-00	METAL	4.7K	1%	1/6W	
R120	1-215-437-00	METAL	4.7K	1%	1/6W	
R121	1-215-429-00	METAL	2.2K	1%	1/6W	
R122	1-215-437-00	METAL	4.7K	1%	1/6W	
R123	1-215-437-00	METAL	4.7K	1%	1/6W	
R124	1-215-429-00	METAL	2.2K	1%	1/6W	
R125	1-216-357-00	METAL OXIDE	4.7	5%	1W	F
R127	1-202-719-00	SOLID	1M	10%	1/2W	

VARIABLE RESISTOR

RV1	1-237-513-21	RES, ADJ, CERMET 200

Ref.No.	Part No.	Description	Remark

TRANSFORMER

T1	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T2	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T3	1-439-383-11	HOT
T4	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T5	1-439-384-11	LOT
T6	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE

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*1-617-887-11 HC BOARD
****

SWITCH

SW1	1-570-567-21	SWITCH, PUSH (2 KEY)
SW2	1-570-567-21	SWITCH, PUSH (2 KEY)
SW3	1-570-567-11	SWITCH, PUSH (2 KEY)
SW4	1-570-567-11	SWITCH, PUSH (2 KEY)

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*1-618-814-11 HE BOARD
****

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*1-627-678-11 W BOARD
****

CAPACITOR

C1	1-106-367-00	MYLAR	0.01MF	10%	200V
C2	1-106-367-00	MYLAR	0.01MF	10%	200V

RESISTOR

R1	1-214-702-00	METAL	75	1%	1/4W
R2	1-214-702-00	METAL	75	1%	1/4W
R3	1-214-702-00	METAL	75	1%	1/4W

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*1-627-675-11 HA BOARD
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CONNECTOR

HA1	*1-566-042-11	PIN, CONNECTOR 3P
HA2	*1-566-044-11	PIN, CONNECTOR 5P
HA3	*1-566-051-11	PIN, CONNECTOR 12P
HA4	*1-566-041-11	PIN, CONNECTOR 2P

RESISTOR

R201	1-249-406-11	CARBON	120	5%	1/4W

SWITCH

S201	1-570-565-11	SWITCH, PUSH (10 KEY)

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*1-627-680-11 HB BOARD
****

	1-570-568-11	SWITCH, PUSH (4 KEY)
	1-570-569-11	SWITCH, PUSH (3 KEY)

CAPACITOR

Ref.No.	Part No.	Description	Remark
C1	1-123-820-00	ELECT 33MF 20% 16V	
C2	1-123-820-00	ELECT 33MF 20% 16V	
C3	1-101-004-00	CERAMIC 0.01MF 50V	
C4	1-101-004-00	CERAMIC 0.01MF 50V	
C5	1-101-004-00	CERAMIC 0.01MF 50V	
C6	1-101-004-00	CERAMIC 0.01MF 50V	
C7	1-101-004-00	CERAMIC 0.01MF 50V	

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-812-42	DIODE TLY124	
D2	8-719-812-42	DIODE TLY124	
D3	8-719-812-42	DIODE TLY124	
D4	8-719-812-42	DIODE TLY124	
D5	8-719-812-43	DIODE TLG124A	
D6	8-719-812-43	DIODE TLG124A	
D7	8-719-812-43	DIODE TLG124A	

CONNECTOR

Ref.No.	Part No.	Description	Remark
HB1	*1-566-064-11	PIN, CONNECTOR 12P	
HB2	*1-566-062-11	PIN, CONNECTOR 10P	
HB3	*1-566-060-11	PIN, CONNECTOR 8P	
HB4	*1-566-064-11	PIN, CONNECTOR 12P	
HB5	*1-566-058-11	PIN, CONNECTOR 6P	
HB6	*1-566-064-11	PIN, CONNECTOR 12P	

RESISTOR

Ref.No.	Part No.	Description	Remark
R1	1-215-469-00	METAL 100K 1% 1/6W	
R2	1-215-469-00	METAL 100K 1% 1/6W	
R3	1-215-469-00	METAL 100K 1% 1/6W	
R4	1-215-469-00	METAL 100K 1% 1/6W	
R5	1-215-469-00	METAL 100K 1% 1/6W	
R6	1-215-469-00	METAL 100K 1% 1/6W	
R7	1-215-469-00	METAL 100K 1% 1/6W	
R8	1-215-469-00	METAL 100K 1% 1/6W	
R9	1-215-469-00	METAL 100K 1% 1/6W	
R10	1-215-469-00	METAL 100K 1% 1/6W	
R11	1-215-469-00	METAL 100K 1% 1/6W	
R12	1-249-425-11	CARBON 4.7K 5% 1/4W	
R13	1-249-423-11	CARBON 3.3K 5% 1/4W	
R15	1-249-423-11	CARBON 3.3K 5% 1/4W	
R16	1-249-423-11	CARBON 3.3K 5% 1/4W	
R17	1-249-423-11	CARBON 3.3K 5% 1/4W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV1	1-237-519-21	RES, ADJ, CERMET 20K	
RV2	1-237-519-21	RES, ADJ, CERMET 20K	
RV3	1-237-519-21	RES, ADJ, CERMET 20K	
RV4	1-237-519-21	RES, ADJ, CERMET 20K	
RV5	1-237-520-21	RES, ADJ, CERMET 50K	
RV6	1-237-520-21	RES, ADJ, CERMET 50K	
RV7	1-237-520-21	RES, ADJ, CERMET 50K	
RV8	1-237-520-21	RES, ADJ, CERMET 50K	
RV9	1-237-520-21	RES, ADJ, CERMET 50K	
RV10	1-237-520-21	RES, ADJ, CERMET 50K	
RV11	1-237-520-21	RES, ADJ, CERMET 50K	
RV12	1-237-521-21	RES, ADJ, CERMET 100K	

SWITCH

Ref.No.	Part No.	Description	Remark
S8	1-570-509-11	SWITCH, TOGGLE	
S9	1-570-509-11	SWITCH, TOGGLE	
S10	1-570-509-11	SWITCH, TOGGLE	
S11	1-570-510-11	SWITCH, TOGGLE	
S12	1-570-509-11	SWITCH, TOGGLE	
S13	1-570-509-11	SWITCH, TOGGLE	
S14	1-570-512-11	SWITCH, TOGGLE	
S15	1-570-509-11	SWITCH, TOGGLE	

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*1-627-681-11 HG BOARD
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RESISTOR

Ref.No.	Part No.	Description	Remark
R1	1-215-465-00	METAL 68K 1% 1/6W	
R2	1-215-451-00	METAL 18K 1% 1/6W	
R3	1-215-469-00	METAL 100K 1% 1/6W	
R4	1-215-469-00	METAL 100K 1% 1/6W	
R5	1-249-425-11	CARBON 4.7K 5% 1/4W	

SWITCH

Ref.No.	Part No.	Description	Remark
SW1	1-570-566-11	SWITCH, PUSH (4 KEY)	
SW2	1-570-566-11	SWITCH, PUSH (4 KEY)	
SW3	1-570-566-11	SWITCH, PUSH (4 KEY)	
SW4	1-570-566-11	SWITCH, PUSH (4 KEY)	

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*1-627-682-11 HH BOARD
****

CONNECTOR

Ref.No.	Part No.	Description	Remark
HH1	*1-566-614-11	PLUG (L TYPE) 3P	
HH2	*1-566-614-11	PLUG (L TYPE) 3P	
HH3	*1-566-614-11	PLUG (L TYPE) 3P	
HH4	*1-566-614-11	PLUG (L TYPE) 3P	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV1	1-238-332-11	RES, VAR, CARBON 20K	
RV2	1-238-332-11	RES, VAR, CARBON 20K	
RV3	1-238-332-11	RES, VAR, CARBON 20K	
RV4	1-238-332-11	RES, VAR, CARBON 20K	

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*1-627-671-11 Y BOARD
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DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-812-43	DIODE TLG124A	

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*1-627-676-11 X BOARD
****

DIODE

Ref.No.	Part No.	Description	Remark
D301	8-719-920-21	DIODE LT-9220H	

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*1-627-687-11 Z BOARD
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*1-561-337-21 CONNECTOR, MULTI

BD BM

Ref.No.	Part No.	Description		Remark
	*A-1135-391-A	BD BOARD, COMPLETE (BVM-1415P ONLY) ******************		
	*A-1135-424-A	BM BOARD, COMPLETE (BVM-1415PM ONLY) ******************		
	*4-353-708-00	HOOK, FINGER		
		CAPACITOR		
C1	1-102-858-00	CERAMIC	10PF	0.5PF 50V (BVM-1415P ONLY)
	1-102-668-00	CERAMIC	15PF	5% 50V (BVM-1415PM ONLY)
C2	1-102-858-00	CERAMIC	10PF	0.5PF 50V (BVM-1415P ONLY)
	1-102-668-00	CERAMIC	15PF	5% 50V (BVM-1415PM ONLY)
C3	1-102-963-00	CERAMIC	33PF	5% 50V (BVM-1415P ONLY)
C4	1-101-880-00	CERAMIC	47PF	5% 50V (BVM-1415P ONLY)
	1-101-361-00	CERAMIC	39PF	5% 50V (BVM-1415PM ONLY)
C6	1-102-676-00	CERAMIC	68PF	5% 50V (BVM-1415P ONLY)
	1-101-884-00	CERAMIC	56PF	5% 50V (BVM-1415PM ONLY)
C7	1-102-884-00	CERAMIC	33PF	5% 50V (BVM-1415P ONLY)
	1-101-361-00	CERAMIC	39PF	5% 50V (BVM-1415PM ONLY)
C8	1-102-943-00	CERAMIC	6PF	0.5PF 50V (BVM-1415P ONLY)
	1-102-935-00	CERAMIC	2PF	0.25PF 50V (BVM-1415PM ONLY)
C9	1-123-356-00	ELECT	10MF	20% 16V
C10	1-123-356-00	ELECT	10MF	20% 16V
C11	1-101-004-00	CERAMIC	0.01MF	50V
C12	1-101-004-00	CERAMIC	0.01MF	50V
C13	1-101-004-00	CERAMIC	0.01MF	50V
C14	1-101-004-00	CERAMIC	0.01MF	50V
C15	1-101-004-00	CERAMIC	0.01MF	50V
C16	1-101-004-00	CERAMIC	0.01MF	50V
C17	1-136-165-00	FILM	0.1MF	5% 50V
C18	1-102-949-00	CERAMIC	12PF	5% 50V (BVM-1415P ONLY)
	1-102-951-00	CERAMIC	15PF	5% 50V (BVM-1415PM ONLY)
C19	1-102-668-00	CERAMIC	15PF	5% 50V (BVM-1415P ONLY)
	1-102-951-00	CERAMIC	15PF	5% 50V (BVM-1415PM ONLY)
C20	1-102-760-00	CERAMIC	68PF	5% 50V (BVM-1415P ONLY)
	1-102-758-00	CERAMIC	56PF	5% 50V (BVM-1415PM ONLY)
C21	1-136-157-00	FILM	0.022MF	5% 50V
C22	1-136-157-00	FILM	0.022MF	5% 50V
C23	1-123-380-00	ELECT	1MF	20% 50V (BVM-1415P ONLY)
	1-136-153-00	FILM	0.01MF	5% 50V (BVM-1415PM ONLY)
C24	1-101-004-00	CERAMIC	0.01MF	50V
C25	1-123-332-00	ELECT	47MF	20% 16V
C26	1-109-678-00	MICA	160PF	1% 500V (BVM-1415P ONLY)
	1-109-676-00	MICA	130PF	1% 500V (BVM-1415PM ONLY)
C27	1-102-515-00	CERAMIC	24PF	5% 50V
C28	1-109-685-00	MICA	330PF	1% 500V
C29	1-123-332-00	ELECT	47MF	20% 16V
C30	1-109-678-00	MICA	160PF	1% 500V (BVM-1415P ONLY)
	1-109-676-00	MICA	130PF	1% 500V (BVM-1415PM ONLY)
C31	1-102-515-00	CERAMIC	24PF	5% 50V
C32	1-109-685-00	MICA	330PF	1% 500V
C33	1-101-004-00	CERAMIC	0.01MF	50V
C34	1-136-153-00	FILM	0.01MF	5% 50V
C35	1-101-004-00	CERAMIC	0.01MF	50V
C36	1-123-379-00	ELECT	0.47MF	20% 50V
C37	1-101-004-00	CERAMIC	0.01MF	50V
C38	1-123-382-00	ELECT	3.3MF	20% 50V
C39	1-109-667-11	MICA	56PF	1% 500V
C40	1-102-942-00	CERAMIC	5PF	0.5PF 50V
C41	1-109-681-11	MICA	220PF	1% 500V
C43	1-123-332-00	ELECT	47MF	20% 16V
C44	1-123-332-00	ELECT	47MF	20% 16V
C45	1-101-004-00	CERAMIC	0.01MF	50V
C46	1-136-153-00	FILM	0.01MF	5% 50V
C49	1-123-379-00	ELECT	0.47MF	20% 50V
C50	1-123-382-00	ELECT	3.3MF	20% 50V
C51	1-109-667-11	MICA	56PF	1% 500V
C52	1-102-942-00	CERAMIC	5PF	0.5PF 50V
C53	1-109-681-11	MICA	220PF	1% 500V
C55	1-123-332-00	ELECT	47MF	20% 16V
C56	1-123-332-00	ELECT	47MF	20% 16V
C57	1-101-004-00	CERAMIC	0.01MF	50V
C58	1-101-004-00	CERAMIC	0.01MF	50V
C59	1-101-004-00	CERAMIC	0.01MF	50V
C60	1-123-332-00	ELECT	47MF	20% 16V
C62	1-102-515-00	CERAMIC	24PF	5% 50V (BVM-1415P ONLY)
C63	1-101-884-00	CERAMIC	56PF	5% 50V
C64	1-101-884-00	CERAMIC	56PF	5% 50V
C65	1-102-951-00	CERAMIC	15PF	5% 50V
C66	1-102-965-00	CERAMIC	39PF	5% 50V
C67	1-102-935-00	CERAMIC	2PF	0.25PF 50V
C68	1-124-963-11	ELECT	33MF	20% 16V
C69	1-124-963-11	ELECT	33MF	20% 16V
C70	1-123-369-00	ELECT	4.7MF	20% 50V
C71	1-101-004-00	CERAMIC	0.01MF	50V
C75	1-101-004-00	CERAMIC	0.01MF	50V
C80	1-123-611-00	ELECT	1MF	20% 50V (BVM-1415PM ONLY)
C100	1-124-963-11	ELECT	33MF	20% 16V
C101	1-123-332-00	ELECT	47MF	20% 25V
C102	1-124-963-11	ELECT	33MF	20% 16V
C103	1-124-963-11	ELECT	33MF	20% 16V
C104	1-124-963-11	ELECT	33MF	20% 16V
C106	1-124-963-11	ELECT	33MF	20% 16V
C107	1-124-963-11	ELECT	33MF	20% 16V
C108	1-124-963-11	ELECT	33MF	20% 16V
C109	1-124-963-11	ELECT	33MF	20% 16V
C110	1-124-963-11	ELECT	33MF	20% 16V
C111	1-124-963-11	ELECT	33MF	20% 16V
C112	1-124-119-00	ELECT	330MF	20% 16V
C113	1-123-318-00	ELECT	33MF	20% 16V (BVM-1415P ONLY)
C114	1-124-963-11	ELECT	33MF	20% 16V
C115	1-124-963-11	ELECT	33MF	20% 16V
C121	1-101-004-00	CERAMIC	0.01MF	50V
C122	1-101-004-00	CERAMIC	0.01MF	50V
C123	1-101-004-00	CERAMIC	0.01MF	50V
C124	1-101-004-00	CERAMIC	0.01MF	50V

Ref.No.	Part No.	Description	Remark
C125	1-101-004-00	CERAMIC 0.01MF	50V
C126	1-101-004-00	CERAMIC 0.01MF	50V
C200	1-124-963-11	ELECT 33MF	20% 16V
C201	1-123-332-00	ELECT 47MF	20% 25V
C202	1-124-963-11	ELECT 33MF	20% 16V
C203	1-124-963-11	ELECT 33MF	20% 16V
C204	1-101-004-00	CERAMIC 0.01MF	50V
C220	1-101-004-00	CERAMIC 0.01MF	50V
C221	1-101-004-00	CERAMIC 0.01MF	50V
C222	1-101-004-00	CERAMIC 0.01MF	50V
C224	1-101-004-00	CERAMIC 0.01MF	50V
C225	1-101-004-00	CERAMIC 0.01MF	50V
C226	1-101-004-00	CERAMIC 0.01MF	50V
C227	1-123-330-00	ELECT 22MF	20% 25V
C250	1-124-963-11	ELECT 33MF	20% 16V
C251	1-101-004-00	CERAMIC 0.01MF	50V
C301	1-101-004-00	CERAMIC 0.01MF	50V
C302	1-101-004-00	CERAMIC 0.01MF	50V
C303	1-101-004-00	CERAMIC 0.01MF	50V
C304	1-102-947-00	CERAMIC 10PF	0.5PF 50V (BVM-1415P ONLY)
C312	1-101-004-00	CERAMIC 0.01MF	50V
C313	1-101-004-00	CERAMIC 0.01MF	50V
C316	1-102-935-00	CERAMIC 2PF	0.25PF 50V (BVM-1415P ONLY)
	1-102-947-00	CERAMIC 10PF	0.5PF 50V (BVM-1415PM ONLY)
C350	1-102-877-00	CERAMIC 33PF	5% 50V (BVM-1415P ONLY)
	1-102-959-00	CERAMIC 22PF	5% 50V (BVM-1415PM ONLY)

TRIMMER

Ref.No.	Part No.	Description	Remark
CV1	1-141-147-XX	CAP, TRIMMER	
CV2	1-141-138-XX	CAP, TRIMMER, 5PF-8PF	

DIODE

Ref.No.	Part No.	Description	Remark
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D4	8-719-100-15	DIODE RD3.0E-B2	
D5	8-719-100-54	DIODE RD9.1E-B2	
D6	8-719-911-19	DIODE 1SS119	
D10	8-712-500-00	DIODE 1T25	
D11	8-719-911-19	DIODE 1SS119	
D12	8-719-100-65	DIODE RD12E-B2	
D13	8-719-100-65	DIODE RD12E-B2	
D15	8-719-911-19	DIODE 1SS119 (BVM-1415PM ONLY)	
D16	8-719-911-19	DIODE 1SS119	
D201	8-719-911-19	DIODE 1SS119	
D202	8-719-911-19	DIODE 1SS119	

IC

Ref.No.	Part No.	Description	Remark
IC1	8-759-204-21	IC TA7193P	
IC2	8-759-800-81	IC LA7016	
IC3	8-759-201-69	IC TL8608P	
	*1-526-654-00	SOCKET, IC (DP) 16P; IC3	
IC4	8-759-201-69	IC TL8608P	
	*1-526-654-00	SOCKET, IC (DP) 16P; IC4	
IC5	8-759-140-53	IC UPD4053BC	
IC6	8-759-800-81	IC LA7016	
IC7	8-759-145-58	IC UPC4558C	
IC8	8-759-145-58	IC UPC4558C	

COIL

Ref.No.	Part No.	Description	Remark
L1	1-408-533-00	COIL, VARIABLE	
L2	1-408-532-00	COIL (VARIABLE) (BVM-1415P ONLY)	
	1-408-514-00	COIL (VARIABLE) (BVM-1415PM ONLY)	
L3	1-408-514-00	COIL (VARIABLE) (BVM-1415P ONLY)	
	1-408-533-00	COIL, VARIABLE (BVM-1415PM ONLY)	
L4	1-408-421-00	INDUCTOR 100UH	
L5	1-408-429-00	INDUCTOR 470UH	
L6	1-408-429-00	INDUCTOR 470UH	
L8	1-408-421-00	INDUCTOR 100UH	
L101	1-408-421-00	INDUCTOR 100UH	
L102	1-408-421-00	INDUCTOR 100UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q1	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q2	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q3	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q4	8-729-800-10	TRANSISTOR 2SC3068	
Q5	8-729-800-10	TRANSISTOR 2SC3068	
Q6	8-729-384-48	TRANSISTOR 2SA844	
Q7	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q8	8-729-384-48	TRANSISTOR 2SA844	
Q9	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q10	8-729-117-54	TRANSISTOR 2SA1175 (BVM-1415P ONLY)	
	8-729-384-48	TRANSISTOR 2SA844 (BVM-1415PM ONLY)	
Q11	8-729-117-54	TRANSISTOR 2SA1175 (BVM-1415P ONLY)	
	8-729-384-48	TRANSISTOR 2SA844 (BVM-1415PM ONLY)	
Q12	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q13	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q14	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q15	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q16	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q17	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q18	8-729-601-47	TRANSISTOR 2SK381-B	
Q20	8-729-117-54	TRANSISTOR 2SA1175 (BVM-1415P ONLY)	
	8-729-384-48	TRANSISTOR 2SA844 (BVM-1415PM ONLY)	
Q21	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q22	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q23	8-729-384-48	TRANSISTOR 2SA844	
Q24	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q25	8-729-800-10	TRANSISTOR 2SC3068	
Q26	8-729-601-47	TRANSISTOR 2SK381-B	
Q28	8-729-117-54	TRANSISTOR 2SA1175 (BVM-1415P ONLY)	
	8-729-384-48	TRANSISTOR 2SA844 (BVM-1415PM ONLY)	
Q29	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q30	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q31	8-729-384-48	TRANSISTOR 2SA844	
Q32	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q33	8-729-800-10	TRANSISTOR 2SC3068	
Q34	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q35	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q36	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q38	8-729-600-24	TRANSISTOR 2SC403SP-51	
Q101	8-729-103-43	TRANSISTOR 2SB734	
Q102	8-729-378-91	TRANSISTOR 2SD789	
Q103	8-729-900-63	TRANSISTOR DTA124ES	
Q104	8-729-900-63	TRANSISTOR DTA124ES	

RESISTOR

Ref.No.	Part No.	Description	Remark
R1	1-249-428-11	CARBON 8.2K 5% 1/4W	
R2	1-249-429-11	CARBON 10K 5% 1/4W	
R3	1-249-422-11	CARBON 2.7K 5% 1/4W	
R4	1-215-425-00	METAL 1.5K 1% 1/6W	(BVM-1415P ONLY)
	1-215-421-00	METAL 1K 1% 1/6W	(BVM-1415PM ONLY)
R5	1-215-395-00	METAL 82 1% 1/6W	(BVM-1415P ONLY)
	1-215-398-00	METAL 110 1% 1/6W	(BVM-1415PM ONLY)

BD **BM**

Ref.No.	Part No.	Description				Remark
R6	1-215-421-00	METAL	1K	1%	1/6W	
R7	1-215-421-00	METAL	1K	1%	1/6W	
R8	1-215-423-00	METAL	1.2K	1%	1/6W	(BVM-1415P ONLY)
	1-215-427-00	METAL	1.8K	1%	1/6W	(BVM-1415PM ONLY)
R9	1-215-421-00	METAL	1K	1%	1/6W	
R10	1-215-421-00	METAL	1K	1%	1/6W	
R11	1-215-391-00	METAL	56	1%	1/6W	(BVM-1415P ONLY)
	1-215-400-00	METAL	130	1%	1/6W	(BVM-1415PM ONLY)
R12	1-215-427-00	METAL	1.8K	1%	1/6W	(BVM-1415P ONLY)
	1-215-429-00	METAL	2.2K	1%	1/6W	(BVM-1415PM ONLY)
R13	1-249-425-11	CARBON	4.7K	5%	1/4W	
R14	1-249-429-11	CARBON	10K	5%	1/4W	
R15	1-249-429-11	CARBON	10K	5%	1/4W	
R17	1-249-433-11	CARBON	22K	5%	1/4W	
R18	1-215-425-00	METAL	1.5K	1%	1/6W	
R19	1-215-425-00	METAL	1.5K	1%	1/6W	
R20	1-215-425-00	METAL	1.5K	1%	1/6W	
R21	1-215-425-00	METAL	1.5K	1%	1/6W	
R22	1-249-405-11	CARBON	100	5%	1/4W	
R23	1-215-441-00	METAL	6.8K	1%	1/6W	(BVM-1415P ONLY)
	1-215-439-00	METAL	5.6K	1%	1/6W	(BVM-1415PM ONLY)
R24	1-215-469-00	METAL	100K	1%	1/6W	
R25	1-249-427-11	CARBON	6.8K	5%	1/4W	(BVM-1415P ONLY)
	1-249-425-11	CARBON	4.7K	5%	1/4W	(BVM-1415PM ONLY)
R26	1-249-415-11	CARBON	680	5%	1/4W	(BVM-1415P ONLY)
	1-249-418-11	CARBON	1.2K	5%	1/4W	(BVM-1415PM ONLY)
R27	1-249-415-11	CARBON	680	5%	1/4W	
R28	1-249-420-11	CARBON	1.8K	5%	1/4W	(BVM-1415P ONLY)
	1-249-423-11	CARBON	3.3K	5%	1/4W	(BVM-1415PM ONLY)
R29	1-249-422-11	CARBON	2.7K	5%	1/4W	
R30	1-249-405-11	CARBON	100	5%	1/4W	
R31	1-247-903-00	CARBON	1M	5%	1/4W	
R32	1-249-429-11	CARBON	10K	5%	1/4W	
R34	1-215-407-00	METAL	270	1%	1/6W	(BVM-1415P ONLY)
	1-215-417-00	METAL	680	1%	1/6W	(BVM-1415PM ONLY)
R35	1-215-407-00	METAL	270	1%	1/6W	(BVM-1415P ONLY)
	1-215-417-00	METAL	680	1%	1/6W	(BVM-1415PM ONLY)
R36	1-215-413-00	METAL	470	1%	1/6W	
R37	1-215-443-00	METAL	8.2K	1%	1/6W	
R38	1-249-441-11	CARBON	100K	5%	1/4W	
R39	1-215-425-00	METAL	1.5K	1%	1/6W	(BVM-1415P ONLY)
	1-215-429-00	METAL	2.2K	1%	1/6W	(BVM-1415PM ONLY)
R40	1-215-421-00	METAL	1K	1%	1/6W	(BVM-1415P ONLY)
	1-249-417-11	CARBON	1K	5%	1/4W	(BVM-1415PM ONLY)
R41	1-215-429-00	METAL	2.2K	1%	1/6W	(BVM-1415P ONLY)
	1-249-421-11	CARBON	2.2K	5%	1/4W	(BVM-1415PM ONLY)
R42	1-215-445-00	METAL	10K	1%	1/6W	(BVM-1415P ONLY)
	1-249-429-11	CARBON	10K	5%	1/4W	(BVM-1415PM ONLY)
R43	1-215-421-00	METAL	1K	1%	1/6W	(BVM-1415P ONLY)
	1-249-417-11	CARBON	1K	5%	1/4W	(BVM-1415PM ONLY)
R44	1-249-433-11	CARBON	22K	5%	1/4W	
R45	1-249-429-11	CARBON	10K	5%	1/4W	
R46	1-249-429-11	CARBON	10K	5%	1/4W	
R47	1-249-441-11	CARBON	100K	5%	1/4W	
R48	1-249-425-11	CARBON	4.7K	5%	1/4W	
R54	1-249-422-11	CARBON	2.7K	5%	1/4W	
R55	1-215-418-00	METAL	750	1%	1/6W	(BVM-1415P ONLY)
	1-215-420-00	METAL	910	1%	1/6W	(BVM-1415PM ONLY)
R56	1-215-420-00	METAL	910	1%	1/6W	
R57	1-249-415-11	CARBON	680	5%	1/4W	
R58	1-249-422-11	CARBON	2.7K	5%	1/4W	
R59	1-249-422-11	CARBON	2.7K	5%	1/4W	
R60	1-215-418-00	METAL	750	1%	1/6W	(BVM-1415P ONLY)
	1-215-420-00	METAL	910	1%	1/6W	(BVM-1415PM ONLY)
R61	1-215-420-00	METAL	910	1%	1/6W	
R62	1-249-415-11	CARBON	680	5%	1/4W	
R63	1-249-422-11	CARBON	2.7K	5%	1/4W	
R64	1-215-477-00	METAL	220K	1%	1/6W	(BVM-1415P ONLY)
	1-249-417-11	CARBON	1K	5%	1/4W	(BVM-1415PM ONLY)
R65	1-215-435-00	METAL	3.9K	1%	1/6W	(BVM-1415P ONLY)
	1-215-429-00	METAL	2.2K	1%	1/6W	(BVM-1415PM ONLY)
R66	1-249-405-11	CARBON	100	5%	1/4W	
R70	1-247-903-00	CARBON	1M	5%	1/4W	
R71	1-249-429-11	CARBON	10K	5%	1/4W	
R72	1-249-429-11	CARBON	10K	5%	1/4W	
R73	1-249-429-11	CARBON	10K	5%	1/4W	
R74	1-249-417-11	CARBON	1K	5%	1/4W	
R75	1-249-427-11	CARBON	6.8K	5%	1/4W	
R76	1-249-427-11	CARBON	6.8K	5%	1/4W	
R77	1-249-425-11	CARBON	4.7K	5%	1/4W	
R78	1-215-424-00	METAL	1.3K	1%	1/6W	
R79	1-215-419-00	METAL	820	1%	1/6W	
R80	1-215-425-00	METAL	1.5K	1%	1/6W	
R81	1-249-422-11	CARBON	2.7K	5%	1/4W	
R82	1-249-425-11	CARBON	4.7K	5%	1/4W	
R83	1-249-435-11	CARBON	33K	5%	1/4W	
R84	1-249-435-11	CARBON	33K	5%	1/4W	
R85	1-215-903-00	CARBON	1M	5%	1/4W	
R86	1-249-429-11	CARBON	10K	5%	1/4W	
R87	1-249-429-11	CARBON	10K	5%	1/4W	
R88	1-249-429-11	CARBON	10K	5%	1/4W	
R89	1-249-417-11	CARBON	1K	5%	1/4W	
R90	1-249-427-11	CARBON	6.8K	5%	1/4W	
R91	1-249-427-11	CARBON	6.8K	5%	1/4W	
R92	1-249-425-11	CARBON	4.7K	5%	1/4W	
R93	1-215-424-00	METAL	1.3K	1%	1/6W	

Ref.No.	Part No.	Description				Remark
R94	1-215-419-00	METAL	820	1%	1/6W	
R95	1-215-425-00	METAL	1.5K	1%	1/6W	
R96	1-249-422-11	CARBON	2.7K	5%	1/4W	
R97	1-249-425-11	CARBON	4.7K	5%	1/4W	
R98	1-249-435-11	CARBON	33K	5%	1/4W	
R99	1-249-435-11	CARBON	33K	5%	1/4W	
R100	1-215-438-00	METAL	5.1K	1%	1/6W	
R101	1-215-438-00	METAL	5.1K	1%	1/6W	
R102	1-215-438-00	METAL	5.1K	1%	1/6W	
R103	1-215-438-00	METAL	5.1K	1%	1/6W	
R104	1-249-437-11	CARBON	47K	5%	1/4W	
R105	1-249-438-11	CARBON	56K	5%	1/4W	
R106	1-249-417-11	CARBON	1K	5%	1/4W	
R107	1-249-417-11	CARBON	1K	5%	1/4W	
R108	1-249-417-11	CARBON	1K	5%	1/4W	
R109	1-249-417-11	CARBON	1K	5%	1/4W	
R110	1-249-417-11	CARBON	1K	5%	1/4W	
R115	1-215-438-00	METAL	5.1K	1%	1/6W	(BVM-1415P ONLY)
	1-215-429-00	METAL	2.2K	1%	1/6W	(BVM-1415PM ONLY)
R116	1-215-438-00	METAL	5.1K	1%	1/6W	(BVM-1415P ONLY)
	1-215-429-00	METAL	2.2K	1%	1/6W	(BVM-1415PM ONLY)
R120	1-249-429-11	CARBON	10K	5%	1/4W	
R121	1-249-429-11	CARBON	10K	5%	1/4W	
R130	1-215-477-00	METAL	220K	1%	1/6W	(BVM-1415P ONLY)
	1-215-485-00	METAL	470K	1%	1/6W	(BVM-1415PM ONLY)
R150	1-249-441-11	CARBON	100K	5%	1/4W	
R201	1-249-423-11	CARBON	3.3K	5%	1/4W	
R202	1-249-423-11	CARBON	3.3K	5%	1/4W	
R203	1-249-422-11	CARBON	2.7K	5%	1/4W	
R204	1-249-423-11	CARBON	3.3K	5%	1/4W	
R220	1-249-441-11	CARBON	100K	5%	1/4W	
R221	1-249-433-11	CARBON	22K	5%	1/4W	
R222	1-249-433-11	CARBON	22K	5%	1/4W	
R250	1-215-415-00	METAL	560	1%	1/6W	
R251	1-215-415-00	METAL	560	1%	1/6W	
R252	1-215-421-00	METAL	1K	1%	1/6W	
R254	1-249-429-11	CARBON	10K	5%	1/4W	
R255	1-249-441-11	CARBON	100K	5%	1/4W	
R259	1-215-421-00	METAL	1K	1%	1/6W	
R301	1-215-469-00	METAL	100K	1%	1/6W	
R302	1-215-491-00	METAL	820K	1%	1/6W	
R303	1-249-418-11	CARBON	1.2K	5%	1/4W	
R305	1-249-431-11	CARBON	15K	5%	1/4W	
R306	1-249-428-11	CARBON	8.2K	5%	1/4W	
R307	1-249-417-11	CARBON	1K	5%	1/4W	
R308	1-249-417-11	CARBON	1K	5%	1/4W	
R309	1-249-393-11	CARBON	10	5%	1/4W	(BVM-1415P ONLY)
R310	1-249-422-11	CARBON	2.7K	5%	1/4W	
R314	1-215-417-00	METAL	680	1%	1/6W	
R315	1-249-422-11	CARBON	2.7K	5%	1/4W	
R316	1-249-413-11	CARBON	470	5%	1/4W	
R317	1-249-413-11	CARBON	470	5%	1/4W	
R320	1-215-472-00	METAL	130K	1%	1/6W	(BVM-1415P ONLY)
	1-215-482-00	METAL	360K	1%	1/6W	(BVM-1415PM ONLY)
R353	1-249-432-11	CARBON	18K	5%	1/4W	
R354	1-249-432-11	CARBON	18K	5%	1/4W	
R400	1-215-429-00	METAL	2.2K	1%	1/6W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV1	1-237-515-21	RES, ADJ, CERMET 1K	
RV2	1-237-499-21	RES, ADJ, CERMET 500	
RV3	1-237-501-21	RES, ADJ, CERMET 2K	
RV4	1-237-501-21	RES, ADJ, CERMET 2K	
RV5	1-237-517-21	RES, ADJ, CERMET 5K	
RV6	1-237-517-21	RES, ADJ, CERMET 5K	
RV7	1-237-504-21	RES, ADJ, CERMET 20K	
RV8	1-237-504-21	RES, ADJ, CERMET 20K	
RV9	1-237-517-21	RES, ADJ, CERMET 5K	
RV10	1-237-517-21	RES, ADJ, CERMET 5K	

THERMISTOR

Ref.No.	Part No.	Description	Remark
TH1	1-800-202-XX	THERMISTOR S-10K (BVM-1415PM ONLY)	

CRYSTAL

Ref.No.	Part No.	Description	Remark
X1	1-567-504-11	OSCILLATOR, CRYSTAL (BVM-1415P ONLY)	
	1-527-825-00	VIBRATOR, CRYSTAL (BVM-1415PM ONLY)	
X2	1-567-409-11	VIBRATOR, CRYSTAL (BVM-1415P ONLY)	
	1-567-416-11	VIBRATOR, CRYSTAL (BVM-1415PM ONLY)	

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Ref.No.	Part No.	Description	Remark
	*A-1316-090-A	GA BOARD, COMPLETE (BVM-1415P ONLY) ******************	
	*A-1316-048-A	GA BOARD, COMPLETE (BVM-1415PM ONLY) ******************	
	*2-990-241-01	HOLDER (A) PLUG	
	*3-337-402-01	BAND, BINDING	
	*4-347-706-00	HEAT SINK (TR)	
	*4-371-803-01	COVER, FUSE HOLDER	
	*4-371-879-02	COVER, AC SELECT	
	4-379-403-01	SPACER (G1), POLISHING	
	*4-379-408-01	INSULATOR (G3)	
	*4-379-409-01	NUT, PLATE	
	4-379-410-01	SPACER (G2), POLISHING	
	*4-379-430-01	PANEL, POWER	
	*4-386-847-01	HEAT SINK (S.R.T)	
	*4-386-848-01	BAND (S.R.T)	
	4-601-466-11	COVER, 3P INLET	

CAPACITOR

Ref.No.	Part No.	Description				Remark
C1	1-124-024-00	ELECT	4.7MF	20%	350V	
C2	1-124-024-00	ELECT	4.7MF	20%	350V	
C3	1-162-117-00	CERAMIC	100PF	10%	500V	
C4	1-162-117-00	CERAMIC	100PF	10%	500V	
C5	1-162-117-00	CERAMIC	100PF	10%	500V	
C6	1-162-117-00	CERAMIC	100PF	10%	500V	
C7	1-124-128-00	ELECT	470MF	20%	25V	
C8	1-124-525-11	ELECT	1000MF	20%	25V	
C9	1-124-128-00	ELECT	470MF	20%	25V	
C10	1-124-525-11	ELECT	1000MF	20%	25V	
C11	1-124-128-00	ELECT	470MF	20%	25V	
C12	1-124-129-00	ELECT	2200MF	20%	25V	
C13	1-124-128-00	ELECT	470MF	20%	25V	
C14	1-124-129-00	ELECT	2200MF	20%	25V	
C15	1-123-985-51	ELECT	1000MF	20%	16V	
C16	1-123-874-00	ELECT	470MF	20%	16V	
C17	1-106-375-12	MYLAR	0.022MF	10%	100V	
C18	1-108-638-11	MYLAR	0.1MF	10%	100V	
C19	1-102-030-00	CERAMIC	330PF	10%	500V	
C20	1-162-117-00	CERAMIC	100PF	10%	500V	
C21	1-102-038-00	CERAMIC	0.001MF		500V	
C22	1-162-117-00	CERAMIC	100PF	10%	500V	
C23	1-106-375-12	MYLAR	0.022MF	10%	100V	
C24	1-108-638-11	MYLAR	0.1MF	10%	100V	

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

GA

Ref.No.	Part No.	Description			Remark
C25	1-123-380-00	ELECT	1MF	20%	50V
C26	1-101-361-00	CERAMIC	150PF	5%	50V
C27	1-101-361-00	CERAMIC	150PF	5%	50V
C28	1-123-356-00	ELECT	10MF	20%	16V
C29	1-123-332-00	ELECT	47MF	20%	25V
C30	1-162-117-00	CERAMIC	100PF	10%	500V
C31	1-102-030-00	CERAMIC	330PF	10%	500V
C32	1-123-380-00	ELECT	1MF	20%	50V
C33	1-101-361-00	CERAMIC	150PF	5%	50V
C34	1-101-361-00	CERAMIC	150PF	5%	50V
C35	1-123-380-00	ELECT	1MF	20%	50V
C36	1-123-332-00	ELECT	47MF	20%	25V
C37	1-130-734-00	FILM	0.0068MF	5%	50V
C38	1-136-165-00	FILM	0.1MF	5%	50V
C39	1-136-165-00	FILM	0.1MF	5%	50V
C40	1-123-381-00	ELECT	2.2MF	20%	50V
C41	1-102-038-00	CERAMIC	0.001MF		500V
C42	1-136-165-00	FILM	0.1MF	5%	50V
C43	1-106-375-12	MYLAR	0.022MF	10%	100V
C44	1-123-356-00	ELECT	10MF	20%	16V
C45	1-162-132-00	CERAMIC	270PF	10%	2KV
C46	1-123-356-00	ELECT	10MF	20%	16V
C47	1-136-173-00	FILM	0.47MF	5%	50V
C48	1-136-173-00	FILM	0.47MF	5%	50V
C49	1-123-356-00	ELECT	10MF	20%	16V
C50	1-101-006-00	CERAMIC	0.047MF		50V
C51	1-101-006-00	CERAMIC	0.047MF		50V
C52	1-101-006-00	CERAMIC	0.047MF		50V
C53	1-101-006-00	CERAMIC	0.047MF		50V
C54	1-101-006-00	CERAMIC	0.047MF		50V
C55	1-123-356-00	ELECT	10MF	20%	16V
C56	1-130-808-00	FILM	0.22MF	5%	400V
C57	1-123-356-00	ELECT	10MF	20%	25V
C58	1-123-379-00	ELECT	0.47MF	20%	50V
C59	1-130-734-00	FILM	0.0068MF	5%	50V
C60	1-102-228-00	CERAMIC	470PF	10%	500V
C61	1-102-228-00	CERAMIC	470PF	10%	500V
C62	1-102-228-00	CERAMIC	470PF	10%	500V
C63	1-102-228-00	CERAMIC	470PF	10%	500V
C64	1-124-024-00	ELECT	4.7MF	20%	350V
C65	1-124-024-00	ELECT	4.7MF	20%	350V
C66	1-162-117-00	CERAMIC	100PF	10%	500V
C67	1-162-117-00	CERAMIC	100PF	10%	500V
C68	1-162-117-00	CERAMIC	100PF	10%	500V
C69	1-124-562-11	ELECT	47MF	20%	200V
C70	1-124-805-51	ELECT	100MF	20%	160V
C71	1-162-117-00	CERAMIC	100PF	10%	500V
C72	1-124-562-11	ELECT	47MF	20%	200V
C73	1-124-805-51	ELECT	100MF	20%	160V
C74	1-123-333-00	ELECT	100MF	20%	16V
C75	1-123-333-00	ELECT	100MF	20%	16V
C76	⚠1-161-953-51	CERAMIC	0.0047MF	20%	400V
C77	⚠1-161-953-51	CERAMIC	0.0047MF	20%	400V
C78	1-162-599-12	CERAMIC	0.0047MF	20%	400V
C79	1-162-599-12	CERAMIC	0.0047MF	20%	400V
C80	1-125-295-00	ELECT(BLOCK)	560MF	20%	200V
C81	1-125-295-00	ELECT(BLOCK)	560MF	20%	200V
C82	1-123-369-00	ELECT	4.7MF	20%	25V
C83	1-101-004-00	CERAMIC	0.01MF		50V
C84	⚠1-136-311-61	FILM	0.47MF	20%	300V
C85	⚠1-162-578-51	CERAMIC	0.0047MF	20%	400V
C86	⚠1-162-578-51	CERAMIC	0.0047MF	20%	400V
C87	⚠1-162-578-51	CERAMIC	0.0047MF	20%	400V
C88	⚠1-162-578-51	CERAMIC	0.0047MF	20%	400V
C89	⚠1-136-311-61	FILM	0.47MF	20%	300V
C90	1-136-159-00	FILM	0.033MF	5%	50V
C91	1-162-578-00	CERAMIC	0.0047MF	20%	400V (BVM-1415P ONLY)

Ref.No.	Part No.	Description			Remark
C92	1-136-159-00	FILM	0.033MF	5%	50V
C93	1-162-578-00	CERAMIC	0.0047MF	20%	400V (BVM-1415P ONLY)
C94	1-102-038-00	CERAMIC	0.001MF		500V
C95	1-136-173-00	FILM	0.47MF	5%	50V
C96	1-102-050-00	CERAMIC	0.01MF		500V
C97	1-136-173-00	FILM	0.47MF	5%	50V
C98	1-136-173-00	FILM	0.47MF	5%	50V
C99	1-102-050-00	CERAMIC	0.01MF		500V
C100	1-162-117-00	CERAMIC	100PF	10%	500V
C101	1-162-117-00	CERAMIC	100PF	10%	500V
C102	1-136-332-11	FILM	0.01MF	5%	630V
C103	1-136-332-11	FILM	0.01MF	5%	630V

DIODE

Ref.No.	Part No.	Description
D1	8-719-912-51	DIODE ESAC25-04C
D2	8-719-918-73	DIODE ESAC25-04N
D3	8-719-901-73	DIODE ESAD25-04D
D4	8-719-901-73	DIODE ESAD25-04D
D5	8-719-907-24	DIODE ESAC31-02D
D6	8-719-907-24	DIODE ESAC31-02D
D7	8-719-924-06	DIODE ERC24-06S
D8	8-719-300-52	DIODE CTU-38R
D9	8-719-300-53	DIODE CTU-38S
D10	8-719-912-51	DIODE ESAC25-04C
D11	8-719-918-73	DIODE ESAC25-04N
D12	8-719-911-19	DIODE 1SS119
D13	8-719-911-19	DIODE 1SS119
D14	8-719-100-57	DIODE RD10E-B2
D15	8-719-911-19	DIODE 1SS119
D16	8-719-911-19	DIODE 1SS119
D17	8-719-911-19	DIODE 1SS119
D18	8-719-100-35	DIODE RD5.6E-B2
D20	8-719-200-02	DIODE 10E2
D21	⚠8-719-300-07	DIODE RB406N
D22	8-759-157-40	IC UPC574J
D23	8-719-911-19	DIODE 1SS119
D24	8-719-100-57	DIODE RD10E-B2
D25	8-719-911-19	DIODE 1SS119
D26	8-719-003-08	THYRISTOR CR3CM-8
D27	8-719-981-00	DIODE ERC81-004
D28	8-719-981-00	DIODE ERC81-004
D29	8-719-981-00	DIODE ERC81-004
D30	8-719-981-00	DIODE ERC81-004
D31	8-719-924-06	DIODE ERC24-06S
D32	8-719-924-06	DIODE ERC24-06S

CONNECTOR

Ref.No.	Part No.	Description
GA1	*1-506-348-XX	3P PLUG (L)
GA2	*1-506-371-00	2P PLUG (L)
GA3	*1-508-768-00	6P PLUG
GA4	*1-508-786-00	2P PLUG (M)
GA5	*1-566-055-11	PIN, CONNECTOR 3P
GA6	*1-566-055-11	PIN, CONNECTOR 3P
GA7	*1-566-058-11	PIN, CONNECTOR 6P
GA8	*1-566-057-11	PIN, CONNECTOR 5P

IC

Ref.No.	Part No.	Description
IC1	1-806-805-11	IC MC5433
IC2	8-759-904-94	IC TL494CN
IC3	8-759-904-94	IC TL494CN

COIL

Ref.No.	Part No.	Description
L3	1-459-643-11	COIL, CHOKE 525UH
L4	1-459-643-11	COIL, CHOKE 525UH
L5	1-459-643-11	COIL, CHOKE 525UH
L6	1-459-643-11	COIL, CHOKE 525UH
L7	1-459-207-00	COIL, CORE

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- The components identified by ☒ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Ref.No.	Part No.	Description	Remark
L8	1-459-644-11	COIL, CHOKE 2.9MMH	
L9	1-459-645-11	COIL, CHOKE 20MMH	
L10	1-421-329-00	COIL, CHOKE	
L11	1-421-329-00	COIL, CHOKE	
L12	1-421-329-00	COIL, CHOKE	
L13	1-421-329-00	COIL, CHOKE	
L14	1-421-329-00	COIL, CHOKE	
L15	1-421-329-00	COIL, CHOKE	
L16	1-421-329-00	COIL, CHOKE	
L17	⚠ 1-421-556-21	TRANSFORMER, LINE FILTER (LFT)	
L18	⚠ 1-421-556-21	TRANSFORMER, LINE FILTER (LFT)	

TRANSISTOR

Ref.No.	Part No.	Description
Q1	8-729-301-76	TRANSISTOR STR8124-R
Q2	8-729-301-76	TRANSISTOR STR8124-R
Q3	8-729-177-44	TRANSISTOR 2SD774-5
Q4	8-729-177-44	TRANSISTOR 2SD774-5
Q5	8-729-177-44	TRANSISTOR 2SD774-5
Q6	8-729-177-44	TRANSISTOR 2SD774-5
Q7	8-729-103-43	TRANSISTOR 2SB734
Q8	8-729-178-54	TRANSISTOR 2SC2785
Q9	8-729-178-54	TRANSISTOR 2SC2785
Q10	8-729-313-42	TRANSISTOR 2SD1134
Q11	8-729-600-60	TRANSISTOR 2SA1115P
Q12	8-729-177-44	TRANSISTOR 2SD774-5
Q13	8-729-178-54	TRANSISTOR 2SC2785
Q14	8-729-178-54	TRANSISTOR 2SC2785

RESISTOR

Ref.No.	Part No.	Description				Remark
R1	1-215-857-11	METAL OXIDE	10	5%	1W	F
R2	1-215-857-11	METAL OXIDE	10	5%	1W	F
R3	1-247-715-11	CARBON	1.5K	5%	1/4W	
R4	1-215-857-11	METAL OXIDE	10	5%	1W	F
R5	1-215-857-11	METAL OXIDE	10	5%	1W	F
R6	1-249-447-11	CARBON	1	5%	1/4W	F
R7	1-247-692-11	CARBON	22	5%	1/4W	
R8	1-249-418-11	CARBON	1.2K	5%	1/4W	
R9	1-249-382-11	CARBON	1.2	5%	1/4W	F
R10	1-249-447-11	CARBON	1	5%	1/4W	F
R11	1-247-692-11	CARBON	22	5%	1/4W	
R12	1-249-418-11	CARBON	1.2K	5%	1/4W	
R13	1-215-866-11	METAL OXIDE	330	5%	1W	F
R14	1-247-700-11	CARBON	100	5%	1/4W	
R15	1-247-709-11	CARBON	510	5%	1/4W	
R16	1-247-709-11	CARBON	510	5%	1/4W	
R17	1-247-700-11	CARBON	100	5%	1/4W	
R18	1-249-425-11	CARBON	4.7K	5%	1/4W	
R19	1-249-419-11	CARBON	1.5K	5%	1/4W	
R20	1-247-838-00	CARBON	2K	5%	1/4W	
R21	1-249-417-11	CARBON	1K	5%	1/4W	
R22	1-249-409-11	CARBON	220	5%	1/4W	
R23	1-249-417-11	CARBON	1K	5%	1/4W	
R24	1-249-421-11	CARBON	2.2K	5%	1/4W	
R25	1-249-409-11	CARBON	220	5%	1/4W	
R26	1-247-700-11	CARBON	100	5%	1/4W	
R27	1-247-713-11	CARBON	1K	5%	1/4W	
R28	1-247-713-11	CARBON	1K	5%	1/4W	
R29	1-247-700-11	CARBON	100	5%	1/4W	
R30	1-215-886-11	METAL OXIDE	100	5%	2W	F
R31	1-215-886-11	METAL OXIDE	100	5%	2W	F
R32	1-215-886-11	METAL OXIDE	100	5%	2W	F
R33	1-247-697-11	CARBON	56	5%	1/4W	F
R34	1-247-697-11	CARBON	56	5%	1/4W	F
R35	1-215-863-11	METAL OXIDE	100	5%	1W	F
R36	1-249-425-11	CARBON	4.7K	5%	1/4W	
R37	1-249-420-11	CARBON	1.8K	5%	1/4W	
R38	1-249-429-11	CARBON	10K	5%	1/4W	
R39	1-249-413-11	CARBON	470	5%	1/4W	
R40	1-215-453-00	METAL	22K	1%	1/6W	
R41	1-249-425-11	CARBON	4.7K	5%	1/4W	
R42	1-215-437-00	METAL	4.7K	1%	1/6W	
R43	1-215-435-00	METAL	3.9K	1%	1/6W	
R44	1-215-427-00	METAL	1.8K	1%	1/6W	
R45	1-247-713-11	CARBON	1K	5%	1/4W	
R46	1-249-417-11	CARBON	1K	5%	1/4W	
R47	1-216-732-11	METAL	820	1%	10W	
R48	1-215-866-11	METAL OXIDE	330	5%	1W	F
☒R52	⚠	METAL OXIDE			2W	F
☒R53	⚠	METAL			1/6W	
R54	1-215-901-00	METAL OXIDE	33K	5%	2W	F
R55	1-215-426-00	METAL	1.6K	1%	1/6W	
R60	1-249-420-11	CARBON	1.8K	5%	1/4W	
R61	1-249-420-11	CARBON	1.8K	5%	1/4W	
R62	1-249-429-11	CARBON	10K	5%	1/4W	
R63	1-249-413-11	CARBON	470	5%	1/4W	
R64	1-249-426-11	CARBON	5.6K	5%	1/4W	
R65	1-215-437-00	METAL	4.7K	1%	1/6W	
R66	1-215-453-00	METAL	22K	1%	1/6W	
☒R67	⚠ 1-214-917-21	METAL	150K	1%	1/2W	
☒R68	⚠ 1-215-437-91	METAL	4.7K	1%	1/6W	
R74	1-215-889-00	METAL OXIDE	330	5%	2W	F
R77	1-215-433-00	METAL	3.3K	1%	1/6W	
R78	1-215-433-00	METAL	3.3K	1%	1/6W	
R80	⚠ 1-202-663-35	SOLID	5.6M	10%	1/2W	
R81	1-215-461-00	METAL	47K	1%	1/6W	
R82	1-215-461-00	METAL	47K	1%	1/6W	
R83	1-215-461-00	METAL	47K	1%	1/6W	
R84	1-215-459-00	METAL	39K	1%	1/6W	
R85	1-215-449-00	METAL	15K	1%	1/6W	
R86	1-215-437-00	METAL	4.7K	1%	1/6W	
R87	1-249-405-11	CARBON	100	5%	1/4W	
R88	1-249-433-11	CARBON	22K	5%	1/4W	
R89	1-249-429-11	CARBON	10K	5%	1/4W	
R90	1-249-429-11	CARBON	10K	5%	1/4W	
R91	1-249-429-11	CARBON	10K	5%	1/4W	
R92	⚠ 1-217-295-11	WIREWOUND	5.6	10%	5W	F
R93	1-215-886-11	METAL OXIDE	100	5%	2W	F
R94	1-205-538-00	CEMENTED	4.7	10%	10W	
R95	1-215-904-11	METAL OXIDE	100K	5%	2W	F
R96	1-215-904-11	METAL OXIDE	100K	5%	2W	F
R97	1-215-904-11	METAL OXIDE	100K	5%	2W	F
R98	1-215-904-11	METAL OXIDE	100K	5%	2W	F

VARIABLE RESISTOR

Ref.No.	Part No.	Description
RV1	1-237-514-21	RES, ADJ, CERMET 500
RV2	1-237-515-21	RES, ADJ, CERMET 1K

RELAY

Ref.No.	Part No.	Description
RY1	⚠ 1-515-491-11	RELAY (POWER)

TRANSFORMER

Ref.No.	Part No.	Description
T1	⚠ 1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)
T2	⚠ 1-447-106-11	TRANSFORMER, DRIVE
T3	⚠ 1-421-624-12	TRANSFORMER, CURRENT
T4	⚠ 1-447-426-12	TRANSFORMER, CONVERTER
T5	⚠ 1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)
T6	⚠ 1-447-106-11	TRANSFORMER, DRIVE
T7	⚠ 1-421-624-12	TRANSFORMER, CURRENT

THERMISTOR

Ref.No.	Part No.	Description
TH1	⚠ 1-800-820-12	THERMISTOR, POWER
THP1	⚠ 1-806-387-11	THERMISTOR (POSITIVE)
THP2	⚠ 1-800-686-32	THERMISTOR (POSITIVE)

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

MISCELLANEOUS

Ref.No.	Part No.	Description	Remark
	⚠ 1-162-142-21	CAP BLOCK, HIGH VOLTAGE	
	⚠ 1-238-301-11	RESISTOR ASSY, HIGH-VOLTAGE	
	⚠ 1-426-263-11	COIL, DEMAGNETIZATION	
	⚠ 1-451-329-11	DEFLECTION YOKE (SY-222)	
	⚠ 1-452-436-11	NECK ASSY, PICTURE TUBE (NA292)	
	⚠ 1-509-546-11	3P INLET	
	⚠ 1-532-203-11	FUSE, TIME-LAG 2A/250V (BVM-1415P ONLY)	
	⚠ 1-532-746-11	FUSE, GLASS TUBE 4A/125V (BVM-1315, BVM-1415PM ONLY)	
	1-533-148-00	HOLDER, FUSE	
	⚠ 1-554-913-11	SWITCH, SLIDE (VOLTAGE CHANGE)	
	1-565-791-11	CONNECTOR, BNC 1P	
D1	8-719-812-42	DIODE TLY124	
D2	8-719-812-41	DIODE TLR124	
S901	⚠ 1-570-052-12	SWITCH, PUSH (AC POWER)(1 KEY)	
V901	⚠ 8-734-521-05	PICTURE TUBE (M34KBE21X) (BVM-1415P, BVM-1415PM ONLY)	
V901	⚠ 8-734-721-05	PICTURE TUBE (M34KBE20X) (BVM-1315 ONLY)	

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ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
⚠ 1-532-203-11	FUSE, TIME-LAG 2A/250V (BVM-1415P ONLY)	
⚠ 1-532-746-11	FUSE, GLASS TUBE 4A/125V (BVM-1315, BVM-1415PM ONLY)	
⚠ 1-534-819-14	POWER CORD (BVM-1415P ONLY)	
⚠ 1-551-812-11	CORD, POWER (BVM-1315, BVM-1415PM ONLY)	
1-560-776-00	SOCKET, CONNECTOR 10P	
*1-627-687-11	Z BOARD	
*2-990-242-01	HOLDER (B), PLUG	
4-312-246-00	BAG, PROTECTION	
4-378-901-01	KEY	
*4-379-479-01	CUSHION (UPPER)	
*4-379-480-01	CUSHION (LOWER)	
4-391-204-01	MANUAL, OPERATION & MAINTENANCE	
4-391-208-01	LABEL, TALLY NUMBER	
*4-391-224-01	INDIVIDUAL CARTON (BVM-1415P, BVM-1415PM ONLY)	
*4-391-225-01	INDIVIDUAL CARTON (BVM-1315 ONLY)	
7-700-731-03	DRIVER, VR ADJUSTMENT	

Ref.No.	Part No.	Description	Remark